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THE TRANSACTIONS

OF THE

EDINBURGH OBSTETRICAL SOCIETY.

VOL. VI.

SESSION 1880-81.

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PREFACE.

THIS, the sixth volume of the Society's Transactions, contains a record of its proceedings during Session 1880–81.

The Society this year inaugurates an annual volume of its sessional work. This step has been considered advisable on account of the greater bulk of its proceedings, during the past and present Sessions, as compared with previous years. Each Ordinary Fellow, as formerly, receives a copy of the Transactions, on this occasion, fully bound.

In this as in former volumes, the views brought forward in the papers or discussions are to be taken as those of the individuals expressing them, and not as representing the opinions of the Society as a body.

October 1881.

4660

EDINBURGH OBSTETRICAL SOCIETY.

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TRANSACTIONS

OF THE

EDINBURGH OBSTETRICAL SOCIETY

FOR SESSION XL., 1880-81.

MEETING I.—NOVEMBER 10, 1880.

DR ANGUS MACDONALD, *President, in the Chair.*

I. *Dr Halliday Croom* showed (1.) a MACERATED HYDROCEPHALIC SKULL from a fœtus on which he had performed cephalotripsy. By means of a trocar and canula he first punctured, and then drew off about 16 oz. of fluid. Forceps were applied, but he failed to extract owing to the narrowness of the brim, and accordingly used the ordinary perforator, applied the cephalotribe, and effected delivery with ease. As the skull beautifully showed, the cephalotribe had not crushed the base, but canted it to the one side and bent it up. (2.) A specimen of SPINA BIFIDA occurring in the sacral and lumbar regions. The child had also developed hydrocephalus. (3.) A SMALL FIBROUS POLYPUS, about the size of a goose egg, which he had recently removed from the uterus of a young woman who had suffered from intense dysmenorrhœa. On examination bimanually and with the sound, he found the uterus enlarged to about the size of a three months' pregnancy, and, after dilatation of the cervix with a sponge-tent, removed the tumour shown. He had no doubt it had been the cause of all her suffering, as she had since menstruated without pain.

II. *Dr Taylor* wished to give his experience of sutures of different material. In one case of excision of the mamma he had found silver wire causing suppuration. In another case he had used two deep catgut sutures, two deep silver ones, and two deep silk ones. He then found that the silk (waxed but uncarbolized) did well, but both silver wire and catgut badly.

The President mentioned a case where he had intentionally left three silkworm gut stitches in a perineum twelve days beyond the usual period, and found them quite good and fresh at the end of

that time. He mentioned this in reference to Dr Keiller's question regarding this material in the debate on his (Dr M.'s) last report.

III. *Dr C. E. Underhill* then read for *Dr T. Edgar Underhill* the following communication on HARE-LIP AND CLEFT PALATE IN A CASE OF TWINS:—The case is unique as far as my own experience goes, and I therefore venture to place it on record, not so much as a contribution towards settling the vexed question of ovulation in twin pregnancies, but rather as an instance of one of the many freaks which Nature so often plays upon the fœtus in utero.

S. J., æt. 25, married, was delivered on August 29th, 1880, of twins (females). Had one child three years ago. Ceased menstruating on Dec. 26th. Pregnancy natural throughout. Labour easy and rapid. The first born was a vertex presentation, and was not so well developed as the second child, which presented by the breech. The umbilical cords were separately inserted into one placental mass. On examining the children I noticed that in both there was a fissure in the upper lip, on the left side. In the larger child the fissure extended into the nostril, widening the alæ, and causing a great disfigurement. Associated with this was a cleft through both the hard and soft palates. In the smaller child the fissure was less, and did not involve the nostril; the hard palate was entire, but the soft palate was widely cleft. The mother told me that the first and only case of hare-lip she had seen was in a friend's child, which had died in November last. She saw the child in its coffin, and the sight appeared to produce an effect upon her, as she continued to think about it for a long time after. In this case the fissure in the lip was also on the left side. Although a firm believer in the influence of maternal impressions during pregnancy, I should hesitate before placing the above in the same category, but rather content myself with looking upon it merely as a curious coincidence.

The President and Dr Simpson remarked on the interest of the communication.

Dr H. M. Church inquired as to the best time for operations on cleft palate.

Dr Taylor thought it a matter not so much of age as one depending on the fretfulness of the child. An age of two years he believed to be a good period.

MEETING II.—NOVEMBER 24, 1880.

DR ANGUS MACDONALD, *President, in the Chair.*

I. *Dr James Young* showed the UTERUS AND ANNEXA removed from a patient who had died suddenly from cerebral effusion. On examination their state was as follows:—Os uteri transverse and

entire; uterine cavity $2\frac{3}{4}$ inches long, but otherwise normal. The right Fallopian tube is occluded and filled with a secretion which, on microscopical examination, is found to be chiefly pus. The right ovary has been removed, and the left ovary and fimbriated end of left tube are blended in one mass. Thin inflammatory adhesions exist between right Fallopian tube and uterus, and bladder and uterus. The patient had suffered from pelvic peritonitis, and had been sterile for many years—a state amply accounted for by the pathological condition described. She had been twice pregnant, but no child had been born for seven years. Menstruation was scanty. Various methods of treatment were tried, without producing any increase in the flow.

II. *Dr Halliday Croom* read his paper

ON THE SYSTEMATIC USE OF ANTISEPTICS IN MIDWIFERY PRACTICE.

The prevention of deaths during childbed is a subject which can never cease to be of interest to this Society so long as maternal deaths continue in their present ratio to be, as they are, the reproach of our art. Attempts more or less successful to prevent them by means of antiseptics are not new. Already the literature on antiseptics in midwifery, although not so bulky as in surgery, is yet by no means inconsiderable. Antiseptics and disinfectants have long been employed in obstetric practice; but of recent years, since the introduction of antiseptics by Mr Lister into surgical practice, much greater attention has been paid to their systematic use in our department. In Copenhagen, Germany, in Switzerland, especially Basel, in Paris, in London, antiseptic precautions have been employed to ward off what is the scourge of our lying-in hospitals.

It is at least twelve years since Bischoff, impressed with a visit he paid to Mr Lister in Glasgow, returned to Basel and set himself to carry out antiseptics in the lying-in hospital there with the most gratifying results.

Although, therefore, antiseptics are by no means new in midwifery, yet there seem to me to be reasons which justify my bringing the subject under your consideration—

1*st*, Because of the prevalence in our Maternity Hospital of maternal deaths, which it ought to be the first duty of every obstetrician to diminish, if not prevent.

2*d*, Because I have had a fair opportunity of carrying out antiseptics with care and accuracy for at least two terms of my service there.

3*d*, Because, so far as I know, the subject has not been ventilated here.

Now, concerning the question of maternal deaths, it must be

admitted that the diminution of maternal mortality is the main object of our art. These maternal deaths, or deaths during childbed,—by which is meant deaths occurring within four weeks after delivery,—have been shown by Duncan, M'Clintock, Le Fort, and others, to be striking in their frequency; Duncan finding the proportion 1 in 120, M'Clintock 1 in 128.

In our own hospital I have gone over the books from its foundation up to the present time, and I find that out of a total of 10,043 women who have been delivered in it, 1·84 per cent., almost 2 per cent., or nearly 1 in 50, have died, so that the Edinburgh Maternity shows a death-rate sufficiently high to attract our attention and incite to the adoption of all means in any way calculated to diminish it. There is, perhaps, a sort of melancholy satisfaction to be derived from a consideration of the fact that we have not as yet reached a mortality to be compared with that attained by some of the German and French hospitals, where a mortality of 1 in 11 is by no means uncommon.

One cannot help feeling inclined to echo Miss Nightingale's remark, who, in commenting on Dr M'Clintock's observations concerning what he thought to be the normal death-rate of childbed, 1 in 128, observes: "One feels disposed to ask whether it can be true that in the hands of educated accoucheurs the inevitable fate of women undergoing, not a diseased, but an entirely natural condition at home, is that 1 out of 128 must die. If the facts are correct, one cannot help feeling that they present a very strong *prima facie* case for inquiry, with the view of devising a remedy for the present state of things." And if a mortality of 1 in 128 justifies such a remark, how much more a death-rate of 1 in 50.

Now, maternal deaths may conveniently be classified under three heads:—

1*st*, Non-puerperal deaths—deaths occurring from conditions altogether apart from the puerperal state—deaths which possibly the puerperal condition may have accelerated, but which are not necessarily connected with it, *i.e.*—deaths from phthisis, bronchitis, etc. With the occurrence or prevention of such deaths the present communication does not deal, but it may be interesting, in passing, just to note the relation which these deaths bear to puerperal deaths properly so called.

This has been well brought out in a table given by Munro in his excellent work on deaths during childbed. In this table he gives the deaths of women in England referred to childbed during the only fourteen years during which there is a record of non-puerperal deaths. He shows that out of 11,298,433 births of children born alive, 10,769 women have died from causes referable to this head, —in other words, that one-sixth of the women who die during the four weeks immediately subsequent to delivery succumb to diseases which are not the result of childbed. With the prevention of such deaths the physician *qua* accoucheur has but little to do.

The second class of deaths, termed the accidents of childbirth, are, of all the causes of death during childbed, those which are most dependent on the skill and adroitness of the accoucheur. Such deaths may arise from convulsions, rupture of uterus, hæmorrhage, and so on. With these deaths we have not at present to deal.

It is with the third class of deaths, deaths from metria or puerperal fever, that we are now concerned.

Again let us look at Munro's table, where we find that of 66,792 women dying during the first four weeks after childbed, 22,355, or 1 in 3, died from puerperal fever.

I have shown the general death-rate of the Edinburgh Lying-in Hospital, but I am unable to say with any accuracy what the relative death-rate is, arranged under the three headings to which I have just referred. The reason of this is simply owing to a want of definiteness in the manner in which the records have been kept.

If the general death-rate is high,—and I fear there is no denying the fact,—much may be said by way of explaining and accounting for it by a reference to the various unsuitable and unsanitary localities in which it has from time to time been situate in its long though chequered existence. It is sufficient for my present purpose to analyze the death-rate since the opening of the New Royal Maternity and Simpson Memorial Hospital. Thanks to the admirable suggestion of Dr Keiller, accurate reports by the ordinary acting physicians have been published quarterly, and the death-rate, as well as the cause, can be ascertained with exactitude.

The new hospital was opened in May 1879, and from that date till the end of October 1880, 320 women have been delivered in the building; and of these 320 women 12 have died, making the mortality 1 in 26·6—3·89 per cent.—a sufficiently startling fact. In the new hospital no similar explanation of the high death-rate is to be found. Here we have a completely new building, with all the most modern sanitary improvements, examined by the most competent sanitary authorities, and conducted with all due care and caution, with a death-rate accompanying a normal process I think I may say higher than now after the capital operation of ovariotomy in the hands of Dr Keith.

Let us analyze this mortality under the three heads to which I have alluded, viz., non-puerperal, accidental, and metria; and what do we find? From non-puerperal causes only one woman died, and she succumbed to an affection of the kidney. Under the second head it may be said that a maternity charity should, *prima facie*, be expected to have a higher death-rate than extern practice, because to it are sent many serious operative cases. I do not think this is the case to the extent that might be supposed. Speaking of my own experience of our own hospital, the great majority of cases are not sent, but come voluntarily, not because of any peculiarity in their case, but simply for shelter till the confinement is over. No doubt serious operative cases are occasionally sent to hospital, but

not in anything like the proportion that might be expected. From this second set of causes there died but one patient, owing to an ovarian tumour complicating pregnancy.

We come now to the third class—deaths from metria or puerperal fever. Since the opening of the hospital, of the 12 deaths which have been recorded, 10 have taken place from this cause. Nor have these deaths been confined to the service of any one physician. With the exception of Professor Simpson, each of us has contributed his quota of deaths from metria. The occurrence of puerperal deaths to the extent I have just shown, occurring in a new hospital, is sufficiently striking to require our earnest attention. In a report which I read to this Society, giving an account of my first quarter at this hospital, I fully recorded three deaths from puerperal fever, and advanced what I believed to have been the origin of the disease, viz., the want of a separate mortuary, and the performance of post-mortem examinations in the hospital. Since that report this fault has been remedied, and the hospital thoroughly and repeatedly disinfected. Notwithstanding all this, the deaths from puerperal fever have continued. Yet during that period there has not been recorded a single case of death from a similar cause in the extern practice of the charity, although the births are double, amounting to 625, and the general death-rate only 1 in 156.

This brings us back to the old question long ago worked out by Sir J. Simpson, Evory Kennedy, and others, of home *versus* hospital practice, and of the greatly increased mortality of hospital as compared with home. The present communication obviously does not embrace any reference to the necessity of maternity hospitals, nor to the best methods of their construction. Those who wish a *résumé* of the whole subject will find such in Dr Munro's excellent book. To me it seems sufficiently established that maternity hospitals must exist, as much for the benefit of women at a time when they most need shelter and assistance, as for the clinical instruction which the medical student can receive there, and there only.

Another point seems equally clear to me, viz., that we must make the best possible use of the hospital we at present possess. For as it has already taken about half a century to impress upon the people of Edinburgh the need of a proper building to be used as a lying-in house, there does not seem any immediate prospect of another being built, even if any flaw could be pointed out as existing in the present one.

The present Maternity Hospital being a necessity, and puerperal fever having been shown to exist there, and to have been the direct cause of death in 1 out of every 32 women, and as all needful sanitary improvements have been made, it becomes necessary to look for the prevention of this scourge by means apart from the building itself.

I speak of prevention rather than cure, because I take it that it must be the experience of most if not all of us who have had to deal

with a pronounced case of puerperal fever, that in its presence we are nearly powerless, or at least we are not in a position to rely with certainty on the efficacy of any of the means employed. The recent paper of Dr Matthews Duncan on the treatment gives an account of the various means that have been employed, and it would appear that the pharmacopœia has been ransacked, and drugs of all kinds have been had recourse to, but with very uncertain effect. At most, we are fortunate if we alleviate pain by narcotics, or prolong life for but a brief period by a free administration of alcohol. If, therefore, we are comparatively unable to cope with puerperal fever once it is fairly established, it becomes our duty to be all the more anxious to adopt any precautions which may offer a reasonable hope of preventing it.

What, then, is the nature of this disease which has proved fatal in our new hospital to one out of every 32 women who have been delivered there? and is it feasible to suppose that it can be prevented? Now, I do not believe that we can ever hope to prevent puerperal fever entirely, because its origin is possible in so many ways, and the factors in its production are often beyond our control; but I feel certain that by a strict attention to antiseptics we shall be able to reduce its occurrence to a minimum, and render its presence in hospital practice, where I have just said it is most common, a rarity. By an almost general consensus of opinion, puerperal fever is regarded as a wound disease resulting from a poison introduced into the wound. Of wounds in the puerperal condition there is no lack, and that after the most normal labours.

Be the labour ever so natural, several wounds are never wanting —1*st*, A tear at the posterior commissure, and frequently, though they are often unobserved, tears in front, in the neighbourhood of the urethra and clitoris. 2*d*, There is seldom wanting a tear in the cervix, more or less deep; and lastly, a wound at the placental site there always is. If there be any want of harmony in the three factors of labour, the wounds at the perinæum and cervix become more extensive, and there is superadded, possibly, the crushing and bruising of the parts from a prolongation of the labour as well as the application of instruments. Now, these wounds, as long as they remain open wounds, and until they become granulating sores, are liable to infection. Besides, these wounds are specially liable to absorb and rapidly spread noxious material through the system; for we must recollect the extreme vascularity of the genital organs and the parts in the neighbourhood, the expansion of the venous and lymph channels, as well as the diminished vitality of the parts close to the wounds.

Now, I have referred to these wounds probably in the order in which the infection takes place; because, no doubt, the external wounds are the most likely and most frequent conductors of infection. Next in order comes the cervical tear, and, least frequently, the placental site. Contained as it is deeply in the uterine cavity, it is

cut off from external influences by the contractions of the uterus. Now, we can only to a very limited extent indeed prevent these wounds. Of the conditions favouring the development and spread of infection in puerperal women by the vascularity of canals, the presence of open wounds, and the greater or lesser destruction of the vitality of the parts surrounding, we can only to a very limited extent indeed modify the two latter; *i.e.*, by a timely use of the forceps we may possibly prevent a deep tear, and certainly will prevent continued contusion, and, consequently, impaired vitality. So much for the condition of the parts favouring the absorption of septic material. Whence comes the infection? For sources of infection we have not far to look. These may either be from without or from within —autogenetic or heterogenetic. Of the former we can readily observe several sources. Even the normal lochia have been shown to be of importance, containing, as they do, copious debris; and if the normal lochia are to be considered possible sources of infection, what shall be said about this discharge when it has become fœtid? Decomposing blood-clot, as well as pieces of retained placenta and membrane, are by no means uncommon accidents during the puerperium. Then, again, the liquor amnii may become septic from contamination with external air in cases of early rupture of the membranes. The discharge from any of these sources, passing over the wounds to which I have referred, before they have become coated with granulations, may at once become a source of infection. To the heterogenetic there is scarcely a limit. First, there are the fingers of the accoucheur and the nurse, as well as unclean instruments and appliances. In our own Maternity, where both the University and extra-mural students are taught, there is the additional risk from students who, in spite of instructions to the contrary, may have come from post-mortem or dissecting-rooms, and from attending infectious cases. Further, there is possibility of infection from insufficiently cleansed linen, as was shown to be the case in a recent report of an outbreak of puerperal fever in the Queen Charlotte Lying-in Hospital in London. The medical report of this hospital for the past year shows that in the spring of the year 1879 sixteen deaths occurred from diseases comprised under the name puerperal fever — a fatality which very properly led to the temporary closing of the hospital and a careful inquiry into the cause of the mortality. The result of the inquiry was, as I have just shown, the discovery that the *fons et origo mali* lay in imperfectly cleansed linen. This hospital was closed accordingly, and since its reopening the death-rate has fallen to 1 in 350. It need scarcely be pointed out that the presence of any decaying animal matter is sufficient cause of infection, as well as the proximity of fever or erysipelas. But, apart from these, the mere aggregation of lying-in women is of itself a cause of danger.

Such is the disease, and such the channels and source of infection. The channels of infection must remain. They are in great measure a part, and a non-preventable part, of the normal process of delivery. The sources of infection, no doubt, are to a much greater extent under our control. By strict attention to cleanliness an immense amount by way of prevention may be accomplished; but in our hospital every attempt has been made. The hospital has been cleaned and disinfected again and again; one set of wards have been changed for another; and yet the mortality has gone on. Unlike some maternities, our hospital is not attached to any general hospital, so that one fertile source of infection is removed. The remedy, then, as Bischoff showed twelve years ago, consists in preventing the septic germs or bacteria from entering the wounds; and as carbolic acid is destructive to the vitality of these germs, the obvious indication is the employment of this or some other antiseptic systematically in the treatment of all cases of labour.

Now, although I would strongly advocate the employment of antiseptic precautions regularly in private practice, yet it is more particularly to the Maternity Hospital that the following simple antiseptic rules apply.

It is impossible, we must admit, to carry out antiseptics completely and thoroughly in obstetrics, at least, except by the adoption of elaborate contrivances, which I fear would be impracticable. But although absolute asepticism is not attainable, yet by a strict adherence to the rules we shall, by modifying the poison, either render it inert or else greatly diminish the severity of the infection.

Rules to be observed by Students.

1. No student shall be allowed to visit the hospital who is engaged in the dissecting-rooms, or in attending post-mortem examinations or infectious cases, either in hospital or dispensary practice.

2. No student shall examine any patient in the hospital, in any way whatever, except in the presence of the ordinary physician or the resident medical officers.

3. Before each per vaginam examination the student shall thoroughly wash his hands in carbolic wash (1 in 30).

4. In all vaginal or uterine examinations 1 in 20 carbolic oil shall be used for lubricating the fingers.

5. Each student, on entering the hospital daily, shall sign the album.

Rules to be strictly observed by Nurses.

1. *Washing Hands.*—No nurse shall touch, or make any application whatever, to the genital organs of a patient, without having first thoroughly rinsed the hands in carbolic wash (1 in 30).

2. A large bottle, containing a solution of 1 in 30 carbolic acid,

and a small bottle of carbolic oil (1 in 20) shall permanently stand on the table in every ward and delivery-room.

3. *Diapers.*—Each diaper, on removal from a patient, shall at once be taken out of the ward or delivery-room downstairs to the wash-house, and then placed in a tub containing carbolic wash.

4. Each diaper shall be washed, boiled, and dried by the laundress.

5. Immediately before application to the patient's genitals, the nurse in charge of the case shall soak the diaper in 1 in 20 carbolic wash, and afterwards dry it, or apply it wet, according to instructions.

6. *Catheters, Vaginal Tubes.*—All catheters and vaginal tubes shall be kept, when not in use, in carbolic oil (1 in 60).

7. *Before* using a catheter, the nurse shall dip her fingers and catheter in carbolic oil (1 in 20).

8. *After* use she shall wash the catheter in carbolic lotion (1 in 20), and then replace it in carbolic oil (1 in 60).

9. *Syringes, Sponges.*—All syringes and sponges, when not in use, shall be kept in carbolic wash (1 in 30).

10. Before using a syringe, the nurse shall lubricate her fingers and the vaginal tube of the syringe with carbolic oil (1 in 20), and see that air is carefully expelled.

11. *Washing and Syringing.*—All washings and syringings, when such are required, shall be done with a solution of carbolic acid (1 in 60).

12. All the Mackintosh sheets shall be thoroughly washed in carbolic wash.

13. *Dirty Sheets.*—All dirty sheets shall be promptly removed from the ward or delivery-room to be cleansed.

14. *Deaths.*—On the death of any patient, the body shall at once be removed to the mortuary outside the hospital.

15. *Visitors.*—No visitor whatever shall be allowed admittance to the hospital unless provided with a special pass from the resident medical officer on duty.

In respect of these rules there are one or two points which require special notice:—

1*st*, In regard to the application of diapers. In the hospital it has been the custom to use the same diapers over and over again, which in itself I hold to be a source of danger; but further, if the nurses are allowed to apply the diapers dry there is no sufficient guarantee of when they have been dipped and dried. As the first twenty-four hours are the most dangerous period, the wounds being raw and the vagina more or less patent, I have adopted the precaution of having the diapers applied when still wet with carbolic wash during that period. This precaution I hold to be of great importance. Perhaps diapers dipped in boracic acid and allowed to dry might do equally well, if not better. They would be applied with crystals still adhering to them, and would probably be more comfortable for the patient.

2*d*, All operative procedure, such as application of forceps and the introduction of entire hand into vagina or uterus, I have conducted under the carbolic spray, with the instrument and arm well lubricated with carbolic oil. The latter is absolutely essential under all circumstances. The former—viz., the use of the spray—is, I think, needful only in hospital, where the infection is greater than in home practice, and also because in hospital, at least in teaching hospitals, the measure, to be properly demonstrated, requires longer time and more exposure of the parts. At the same time, if I had to deliver a woman in private with scarlet fever or erysipelas in the house, I should certainly use the spray.

3*d*, The carbolic oil is to be preferred to carbolic acid wash to keep the instruments when not in use. I fear I have destroyed several catheters and vaginal tubes with the carbolic wash. A weak carbolic oil does not in any way injure gum-elastic instruments.

4*th*, I have adopted, and found it valuable, to insist on the students, at every morning visit, signing an album acknowledging that they have conformed to the rules I have laid down for them.

5*th*, In any case where the labour is prolonged, it is desirable to wash out the vagina occasionally with a weak solution of carbolic lotion previous to delivery.

These rules, involving as they do considerable trouble on the part of the nurses, are apt to be perfunctorily carried out. A great deal of the success of the treatment, therefore, depends on the energy and strictness of the resident surgeons. It must be their duty, at each daily visit, to inquire carefully whether and how the antiseptic precautions have been carried out in the case of each individual patient. Satisfactory results cannot be expected unless the precautions are scrupulously observed in every case.

In bringing this paper to a conclusion, the question naturally arises, Am I able to show that the adoption of these antiseptic precautions has been accompanied by any good results in my own experience during the two terms I have had the privilege of conducting in the present hospital? Early in my first quarter three maternal deaths from septicæmia rapidly succeeded one another, originating in the manner I have already described. During the same period high temperatures and frequent attacks of pelvic peritonitis were common.

After the third death the antiseptic precautions just described were adopted, with the result that the temperature became normal, the peritonitis disappeared, and no further case of septicæmia occurred. On assuming duty this quarter I found a septic case in hospital, which died from septicæmia, and shortly after a second patient succumbed to the same disease. Thereafter antiseptic precautions were energetically carried out, and no further case occurred, and the temperature, with one or two exceptions, to which I have alluded in my report, became and continued normal; for I hold that the frequent pelvic disturbance and high temperature

which showed themselves in the early days both of my present and former quarters were owing to septic influences, these becoming definitely and fatally developed when specially predisposed persons were attacked. But it may be said that the satisfactory result in my first quarter was owing to the closure of the hospital, and its thorough disinfection, and at that time such certainly was my impression, as shown in my previous report; but this year, after the second death from septicæmia, no such closure took place, and the deliveries went on uninterruptedly, the only change being the careful adoption of the antiseptic rules, and yet no indications of septicæmia manifested themselves. It must be kept in recollection that we labour in the Maternity under two great disadvantages—

1*st*, We have not, as in other hospitals, a permanent trained staff of nurses, but each acting physician has to begin and conduct his quarter with a new and often most incompetent set of women, who, without any previous instruction, come to be trained as nurses. It is often with difficulty we can impress on them the most ordinary rules of cleanliness, apart altogether from the carrying out of minute antiseptic details. It is therefore with satisfaction we must regard the proposed appointment of a permanent trained nurse, to whom the superintendence of such minutiæ can be left.

2*d*, It must be borne in mind that the majority of the intern cases are single women who have been seduced, and who, apart from their mental condition, which is of great importance, have, previous to admission, been in straitened circumstances and badly nourished, and are consequently specially liable to be quickly and gravely affected by any septic influence under which they may be brought.

From these and such like causes I fear it is utopian to hope that we shall ever be able to prevent puerperal septicæmia entirely. I feel convinced, however, that by a strict observance of these or some such antiseptic rules we shall very materially diminish its frequency, certainly prevent anything like an epidemic, and render its presence a rarity in our hospital, where hitherto it has been a scourge.

The President thought it a most important communication, and hoped it would give rise to an interesting discussion.

Dr Taylor felt grateful to Dr Croom for his paper, although he thought he put too much faith in carbolic acid. It was certainly a good antiseptic, but others were more effectual, namely, care and cleanliness. He had some experience in the Maternity of old days, as he was resident physician in it for nine months. During the previous nine months there had been thirteen deaths, and during the subsequent six months there had been six deaths. He found that the mortality was due to the internal arrangements, as the same unpurified mattresses were employed for successive patients. He had great difficulty in getting this arrangement altered. In

addition to this, he had always one ward empty for a week; and a third thing was that great care was taken that the patient brought in no infection from without. To secure this last point every patient was put in a bath on entrance, even although the birth sometimes occurred in the bath-room. As the result of these precautions he had only one death during his nine months' tenure of office. This death was not due to puerperal fever; and he might remark that this special patient had been put into an uncleansed bed. He had never had a maternal death in his private practice. Dr Croom's description of the avenues of entrance for puerperal fever was very good. He had listened with pleasure to the paper.

Dr Keiller agreed with Dr Taylor as to the value of the paper. He remembered the period alluded to by Dr Taylor. Sir James Simpson had gone into the question of the causes of puerperal fever very thoroughly. He also insisted on the importance of the employment of fresh straw for each new case. He had no doubt as to the danger of hospitals. He believed the antiseptic treatment to be very good. He remembered asking Mr Lister if he thought his system of antiseptics could be carried out in midwifery. His reply was that it would be difficult, but that he thought it possible. One point he wished to insist on was that the nurses should not live in the Maternity Hospital, but in some place near. He thought that they should specially insist on women being very cleanly in their persons, especially during their menstruation. He was at one with Dr Croom as to the employment of antiseptics.

Dr Taylor alluded to a correspondence which appeared some years ago in the *British Medical Journal*, affirmative of the truth of a popular belief, that a woman during her menstrual period was unfit to manipulate ham in the process of curing, the general experience being that ham so treated did not keep. This correspondence was cut short by a leader from the editor, in which he dealt with this suggestive subject in a summary and unscientific manner. The truth was, that these popular beliefs were, as a rule, the result of intelligent observation and sagacious inference, and this one, at least, was supported by not only ample testimony, but constantly recurring experience. They were all aware that whilst in some women menstruation was a comparatively local process, in others it was accompanied by characteristic emanations from the rest of the body, and these, proceeding from the hands and reaching the pork in the process of rubbing, could hardly fail to contaminate it. In the same manner, if these emanations be brought into contact with the raw surfaces which seem to be a necessary contingent of parturition, how much more rapidly and certainly will mischief be done! If it affects raw pork, notwithstanding the intervention of salt used in rubbing, how much more rapidly will it be absorbed to the detriment of a living organism. Hence there is great need

for the precautions which Dr Keiller suggests. Not only should the nurses be separately housed, but the grave question forces itself upon us, Should a menstruating woman be allowed to nurse at all in cases of parturition?

Dr James Carmichael had listened with great satisfaction to Dr Croom's paper, and believed it would do good service in the profession. It was two years since the use of antiseptics in midwifery had been heralded in this Society, and they had the subject now regularly under discussion for the first time. He thought Dr Croom had demonstrated the danger of maternity hospitals, although he could not agree with Sir James Simpson in thinking they should be abolished altogether, as in large cities their existence was a matter of convenience as well as necessity. He thought Dr Croom's rules should be fuller. Thus the patient might lie on an antiseptic sheet, and so on.

Dr C. E. Underhill remarked on the interest of Dr Croom's paper. It was certainly striking that there were no deaths in the extern department. The antiseptic method advocated by him was much like that of Stadtfeld of Copenhagan. As to the causes of puerperal fever, he believed that it was very seldom autogenetic, as was shown by the comparative rarity of its occurrence in private and extern hospital practice. The poison was really introduced from without. He was astonished to find that the wards in the Maternity Hospital had so many beds, and thought this a serious mistake in arrangement in a lying-in hospital.

Dr James Young said that in private practice he used carbolic oil in all gynæcological cases as an antiseptic, and in obstetric practice he recommended the free use of Condy's fluid in warm water, or Condy's ozonized water, with which the patient was bathed at frequent intervals. Vaginal injections of the same were very useful, especially when the lochial discharge became fœtid. He could not boast of Dr Taylor's success, as he had had several deaths in his obstetric practice.

Dr A. H. Barbour thought the use of the term "antiseptics" in midwifery was a misnomer, as one could not keep vaginal or perineal wounds antiseptic. He thought it of importance to wash vaginal wounds and apply salicylate paste according to Gusserow's plan. Schroeder washes out the vagina often, and uses constant intra-uterine irrigation in septic cases. In Prague, injections are used as little as possible. He himself was of opinion that vaginal injections were beneficial.

Dr J. B. Buist thought that Dr Croom had in his paper hit a good many nails on the head. One cause of puerperal fever was a want of cleanliness on the part of the nurses. It seemed to him extraordinary that each physician began his quarter with a new staff of nurses. He did not think that the students carried infection. The real cause was to be found in the aggregation of patients and nurses. He admired the simplicity of Dr Croom's

method. No one advocated Listerism in obstetrics, as that was impossible. The use of injections was uncalled for, as it introduced septic matter.

The President had listened with great pleasure to Dr Croom's paper. The practice advocated by Dr Croom was an extension of his own, with the addition of the spray (in operating cases) as recommended by Stadtfeld of Copenhagen. Undoubtedly the *sine qua non* in a maternity hospital was cleanliness. Still, one should not trust too much to carbolic oil, as Zweifel had demonstrated the occasional occurrence of septic bacteria in catgut kept in carbolic oil. Koch's and Ogston's experiments showed that carbolic acid in a five per cent. solution certainly destroyed the *materies morbi* in putrid pus, rendering it perfectly inert, and such a solution could easily be borne by the hands without inconvenience. As regards the word autogenetic, the French were undoubtedly right in rejecting the distinctions. They maintained that no such condition as autogenetic septicæmia ever occurred. If all outside influences were excluded, there was no possibility of the tissues generating septic poison. In regard to the criticism by Dr Barbour of the use of the term antiseptics, he thought Dr Croom quite right. He did not much fear the students of anatomy carrying contagion, inasmuch as the subjects they dissected were usually saturated in a disinfectant fluid, and, besides, were usually long kept in spirit. Dr W. Hunter taught anatomy and practised obstetrics without thereby causing any danger to his patients, so far as our information warrants us in asserting. At any rate, he had the most fashionable practice of his time in London. This he could not have done were it so dangerous for students to dissect and at the same time attend cases of midwifery as it is sometimes asserted. In private practice he thought systematic vaginal injections troublesome and unnecessary in ordinary cases. He did not recommend them except the case had been instrumental, or the patient had been subjected to a great deal of manipulation, as the *nimia diligentia obstetriciæ* could do harm as well as the *nimia diligentia chirurgiæ*. In his own report he had mentioned this as to the too free use of antiseptics. They could not be too particular in carrying out the rules given by Dr Croom. He was glad they were to have a permanent nurse in the hospital, and he hoped they would have better results for the future; but he could not adopt some of the favourable views of extern hospital and private practice mentioned. It was impossible to keep one's eye on extern patients long enough, and somehow, in private practice, there was a universal tendency to rapidly forget one's losses.

Dr Croom was extremely gratified that his report had been so well received. He could congratulate Dr Taylor from the bottom of his heart on the good results he had in his private practice. Carbolic acid was a good disinfectant; but he would employ any other one equally efficient. Mere cleanliness was not sufficient,

as their Maternity experience had taught them. He thought with Dr Keiller that it would be very desirable if the nurses lived out of the Hospital in a building by themselves, as they do in the Royal Infirmary. The remarks of both Drs Keiller and Taylor on menstruation as a means of infection were most important and suggestive, and the field was a wide but a difficult one for study. He wished to point out to Dr Barbour that the use of antiseptics in midwifery did not mean Listerism. He therefore could not agree with Dr Barbour as to the term antiseptics in midwifery being a misnomer. He was anxious to draw attention to a point which he thought had been a little misunderstood, viz., that he used the spray only in operative cases.

MEETING III.—DECEMBER 8, 1880.

DR ANGUS MACDONALD, *President, in the Chair.*

I. *Professor Simpson* exhibited an ANENCEPHALIC FŒTUS sent by Dr Paterson of Hawick. The child was still-born. The quantity of liquor amnii was excessive, so that it was thought there might be twins. The case was of interest as one of recurring monstrosities. The first child was full time, well developed, except that there was a tumour, larger than the child's head, projecting through the posterior fontanelle. It lived six months. The second child was anencephalic, like the specimen exhibited. It was a male, and still-born. The quantity of liquor amnii was excessive. The third was a girl, well developed and healthy. She is living still, active, and intelligent. The fourth was, like the specimen, a boy, still-born. The fifth was a girl. She is living still, and is in every respect healthy and intelligent, like her sister. The sixth was the specimen now shown. Professor Simpson remarked on the excess of liquor amnii as illustrating that to which he had previously drawn attention, the occurrence of hydramnions with anencephaly.

II. *Professor Simpson* exhibited Professor Freund's INSTRUMENTS for PELVIMETRY, and demonstrated their use on the bony pelvis. One instrument was used for measuring the conjugate at the brim; a second and larger rod for external measurements; and a third for measuring the transverse diameter at the brim.

III. *Dr Macdonald* exhibited the UTERUS and OVARIES of a patient, aged 68, sent by Dr Osbert Wilson of Huntly. The following are the particulars of the case:—The patient had been a pauper for nearly forty years, and had proved herself a considerable pest to the local medical men for the whole of that time. She complained of all sorts of troubles in the course of her life; but they usually exhibited a marked hysterical character. Latterly she suffered from gastric symptoms, and there was very great dilatation of the stomach,

with narrowing of the pyloric orifice, detected after death. The stricture was not malignant, however. The peculiar condition of her ovaries and uterus was not suspected during life. It will be observed that the uterus is small, and that its vaginal portion is the subject of senile degeneration. Two small polypi project from the outer os, whilst from the upper posterior corner of the body of the uterus a polypoid, subserous fibroid, about the size and shape of a large horse-bean, is seen to hang. The right ovary has nearly if not entirely disappeared, its place being taken by a rounded, or rather oval, mass of calcareous matter, the surface of which is rough and nodular, like that of a mulberry calculus. This calcareous mass measures $1\frac{3}{4}$ in. in length and $1\frac{1}{2}$ in. in breadth, and weighs nearly $1\frac{1}{2}$ oz. The left ovary is small and shrunken, but otherwise appears tolerably healthy, except near the middle part of the hilus, where there lies embedded a nodule of calcareous material about the size of a pea. The condition of the ovaries in this case appearing very singular, both on account of the interest which the woman's continued ill-health suggests in relation to the ovarian disease, as well as on account of the rarity of the lesion itself, he (Dr M.) has thought it worth while to show the preparation to the Society. Would this woman have been relieved had Battey's operation been performed upon her? Would she have been a useful member of society had she survived it? One cannot help raising this question in the face of such a preparation and after such a history.

IV. *Dr Macdonald* exhibited specimens of the URETHRAL ENDOSCOPE invented by Dr Skene of Brooklyn. There were two forms of this instrument: one, with blunted extremity and fenestrated side, for examining the urethra; the other, of a different shape, for examining the fundus of the bladder. This instrument he had lately used with great advantage. It can quite easily be employed without dilating the urethra, and the reflector of a laryngoscope with the sun's light suits excellently to afford the necessary illumination.

V. *Dr Macdonald* also showed some TUPELO-TENTS, which, on account of their greater rapidity of dilatation, as also because of their much greater dilating power, possessed very manifest advantages over both sponge-tents and tangle-tents. The tupelo-tent is prepared from an American marsh plant, the *Nyssa aquatica*. The process employed destroys entirely the vegetable juices contained in the plant, so that the tents are not liable to become putrid by fermentation of their gelatinous contents, as the tangle-tents are. Besides this, they are perfectly uniform in their dilating power, only require about three or four hours to completely dilate, and have about twice the dilating power of tangle-tents. He believed the tupelo-tent would very soon supplant both the sponge and the tangle-tent in practice.

VI. *Professor Simpson* then read his paper on

METHOD OF CASE-TAKING IN MIDWIFERY.

THE method of case-taking hitherto followed in our Maternity is unsatisfactory. I suppose my colleagues have felt this, as I have felt it, more keenly since we began to present quarterly reports of our *res gestæ* to this Society. Dr Croom has prepared a scheme according to which the results of each quarter's observations may be systematically reported. I have set myself the task of preparing a sheet for registration of the various points relating to each individual case.

At first I thought of drawing up such a card as I showed to the Society last year,[1] and which we use in the gynecological department of the clinical class for guiding the clerks in taking their cases. But I bethought me that in the continental maternities which I had visited the history of each patient was kept on a sheet carefully spaced out, and having in each space a word or two printed as a rubric to indicate the facts or phenomena to be recorded in it. Following their example, and guided by the study of a series of their protocols which I collected in a recent visit to Germany, Switzerland, and Belgium, I have drawn up the midwifery recording sheet which I now submit to the Society. I will be glad of any suggestions that will help to make it more complete and serviceable. Though it is headed "Edinburgh Royal Maternity and Simpson Memorial Hospital," Messrs Maclachlan & Stewart, who furnish them to us at the rate of 8s. a hundred, are prepared to furnish similar sheets at the same rate to any lying-in hospital, or to any private practitioner, with an appropriate heading.

EDINBURGH ROYAL MATERNITY AND SIMPSON MEMORIAL HOSPITAL.

Case of .....

No. *in Daybook.* *No.* *during Quarter* { ..... / ..... }

Admitted..... *Confined*..... *Discharged*.....

I. ANAMNESIS.

Name ..... para. Age

Married. Single. Widow. Residence

Menstruation began at Type days. Duration days. Quantity

Date of last Menstruation from to

Stirrage first felt Probable date of Conception

Condition during Pregnancy—

Complications of Pregnancy—

Previous Obstetric History—

[1] See my *Contributions to Obstetrics and Gynecology*.

II. PHYSICAL EXAMINATION ON.....

General Appearance
Breasts

ABDOMINAL EXAMINATION.
- Inspection
- Mensuration
- Abdominal Walls
- „ Cavity
- Palpation
  - *Uterus.*
    - Height of Fundus
    - Direction
    - Size
    - Form
  - *Fœtus.*
    - Head
    - Back
    - Limbs
- Auscultation
  - Uterine Bruit
  - Fœtal Heart
  - Other Sounds

VAGINAL EXPLORATION.
- External Pudenda
- Vagina
- Cervix and Orifices
- Fœtus
- Rectum and Bladder

Pelvis { Il. cr..... Il. Sp..... Inter-trochant.....
Ext. Conj..... Diag. Conj..... True Conj.....

Diagnosis of Presentation.....
„ Position.....

Prognosis { Date of Labour.....
Character.....

III. LABOUR ON.....

Pains began — Their character
Os fully dilated at — Waters escaped at
Presentation
Position
Mechanism—
Duration of Stage I. II. III.
Artificial Interference—
PECULIARITIES—

CHILD.
- Condition
- Development
- Sex
- Head.
  - Diameter
  - Circumference

	Length					Weight	
	O. M.	O. F.	S. O. B.	Bi.-P.	Bi.-T.	T. B.	Caput suc.
Diameter							
Circumference							Markings

Placenta—Form Size Weight
Membranes Liquor Amnii
Cord—Insertion..... Length.....
Convolutions round Ch..... Contortions.....

IV. PUERPERIUM.

..... as on Special Sheet

V. CONDITION ON DISMISSAL ON.....

MOTHER.
- General
- Breasts
- Uterus
  - Size
  - Position
  - Os
- Vagina
- Pudenda
- Other Pelvic Tissues

CHILD.
- General
- Mode of Nutrition
- Umbilicus

The first page begins with an indication of the nature of the case recorded on it, according to the class of labour to which it belongs. In my own records I intend that the residents shall register them according to the following classification of labour:—

I. NATURAL LABOUR.—Head alone presenting, and the labour terminated within twenty-four hours.

II. LINGERING LABOUR.—Head presenting, but labour delayed beyond twenty-four hours.

III. INSTRUMENTAL LABOUR.—The labour needing to be terminated by some operation—

1. Safe to mother and child—as forceps.
2. Dangerous to child—as embryulcia.
3. „ mother—as Cæsarean section.

IV. PRÆTERNATURAL LABOUR, including—

1. Pelvic presentations.
2. Transverse „

V. COMPLEX LABOURS, presenting complications—

A. On the part of the mother—as,

1. Hæmorrhage.
2. Rupture.
3. Convulsions.
4. Thoracic and abdominal diseases.
5. Inversion of the uterus.

B. On the part of the child, as—

1. Prolapsus funis.
2. Twins.
3. Monsters.

The indication of the kind of case is followed by the note of the patient's number in the Maternity day-book, as well as of her number in the quarter of the physician on duty, and of the dates of her admission, confinement, and dismissal.

I. ANAMNESIS.—The first of the five sections into which the full record of each case naturally divides itself occupies the greater part of the first page. This is the so-called anamnesis, or information to be gained by questioning of the patient.

The first space contains her name and age, an indication of the number of her conception, whether she be—I. Para, II. Para, III. Para, or what. In the second space the pen will be drawn through the words "single," and "widow" if she be a married woman. The third space will receive the note of her usual menstruations, as to the age at which they first appeared; their type or cycle, whether it be the usual twenty-eight days or some deviation from it; the menstrual habit, as to the number of days the flow continues, and the quantity, whether it be free, moderate, or scanty. The fourth space will tell the date at which the last catamenia began and ceased. The fifth will contain the date of so-called quickening at which the patient first noticed the stirrage of the fœtus, and the probable date of conception, if any special circumstance have led her to assign a definite date for it. The remaining wider spaces give room for remarks as to her general condition during the present pregnancy, or the history of any special disorders that may have complicated its course, and for the full record of the previous obstetric history of women who have had earlier conceptions.

II. PHYSICAL EXAMINATION.—As a rule it is advisable to make as careful and complete an examination of every pregnant female as possible at our first interview with her. The second page of our protocol is intended to record the results of such an examination. It will certainly not be necessary in each case to make a note in reference to every point indicated on this page, but I do not think there are any superfluous spaces in it.

The first space will note the patient's general appearance, and may specify her height and weight when there is any marked deviation from the normal standards. The second space should tell the degree of development of the mammæ, the condition of the nipples, and the character of the secretion. The examination of the abdomen next falls to be undertaken, and the third space will give the result of inspection of the surface, the fourth the results of measurements taken round the umbilicus and from pubes to ensiform cartilage, while the fifth will indicate any œdema or other peculiarity in the abdominal parietes, and the presence of any other than the uterine tumour in the abdominal cavity. For the last ten years our students have been taught the importance of careful bimanual palpation in the examination of abdominal tumours, and especially in the examination of the gravid uterus, and most practitioners are now well aware of the value of the

information thus to be obtained. A sixth broad space on this second page of our protocol will register the results of this abdominal palpation with regard to the position of the fundus uteri, and with regard to the direction, size, and form of the uterus generally, and will also register the relative position of the head, back, and limbs of the fœtus as these are recognised by palpation through the walls of the uterus in the intervals of relaxation of the muscular contractions. The seventh space gives the results of auscultation as regards, *first*, the position and character of the uterine bruit; *second*, the site, character, and rate of rapidity of the fœtal heart; and, *third*, any other sounds, such as the funic souffle, that may be heard in special cases. Another broad space is devoted to what I have called the vaginal exploration, although it includes examination of the external pudenda, and the conditions of the rectum and bladder. The notes as to the condition of the vagina, of the cervix and its orifices, and of the presenting part of the fœtus, are naturally found in the subdivisions of this "vaginal," space. Next, the pelvis has a space to itself, and the common measurements which it is useful in every case to take are specially registered. These are the ilio-cristal, ilio-spinous, inter-trochanteric, external conjugate, diagonal conjugate, and the estimated true conjugate of the brim. Room is left in this space for the entry of such of the oblique or other diameters as require special record in cases of individual deformity. The two last spaces in this page register the diagnosis formed of the presentation and position of the fœtus, and prognosis of the probable date of confinement and character of the labour.

III. The Labour.—The largest section is devoted to the phenomena of the labour, and the third page is occupied with the various points requiring to be recorded during its progress. The first space notes the hours of the commencement of the pains and their general character, the second the hour of the full expansion of the external orifice of the uterus and of the escape of the waters. The third space will record the exact presentation and position of the child as these are definitely recognised during the progress of the labour. The fourth space will record the mechanism of the labour, or the movements impressed upon the head or other presenting part as the fœtus traverses the passages. The fifth registers the respective durations of the three stages of labour. A sixth wide space gives room for the record of any kind of artificial interference which it may have been found necessary to resort to; and a seventh still wider space is provided for entering any peculiarities that may have been observed in regard to the powers, the passages, or the passenger, individually or in their mutual relations.

We turn to the fourth page, and continue the record of the labour as it regards the child. Its first space notes its condition at the moment of birth as to vitality or still-birth, strength or weakness; the next its development, whether full time or premature;

and the third its sex, size, and weight. A fourth important space is constructed to receive the measurements and markings of the fœtal head. Of the measurements, squares are arranged for noting both the diameter and the circumference of the occipito-mental, occipito-frontal, and sub-occipito-bregmatic planes; whilst of the transverse and perpendicular measurements the bi-parietal, bi-temporal, and trachelo-bregmatic, only the diameter requires record. Room is left for noting the site of the caput succedaneum and any special markings that may be observed in particular cases. The placenta has then a space for itself, to record its form, size, and weight. Following it is the space for noting the condition of the membranes and the quantity and quality of the liquor amnii, The last space of this section is occupied with the umbilical cord, giving its place of insertion in the placenta, whether central, marginal, or intermediate, its length, the number and course of its convolutions round the child, and the number and course of its own contortions or twistings.

IV. The Puerperium.—A space in the main sheet may note the general character of the puerperium, but the daily record is entered on a special sheet, ruled so as to contain the notice of the maternal temperature, pulse, respiration, lochia, etc., and having a narrower column for remarks as to the state of the infant.

V. Dismissal.—The last section is devoted to a record of the result of the examination which ought to be made of every patient who is passing from under our care. The special maternal spaces are for—1*st*, her general condition; 2*d*, the state of the breasts; 3*d*, the size and position of the uterus, and the state of the os; 4*th*, the state of the vagina; 5*th*, of the pudenda; and, 6*th*, of any of the other pelvic structures that may be found disturbed or diseased. The last three spaces record the general condition of the infant, the mode of its nutrition, and the condition of the umbilicus.

I have tried to make the record full enough to contain all that is likely to be worthy of note in any case of labour and its consequences, without entering into unnecessary details as regards, *e.g.*, the colour of the infant's eyes, and other points which are noted in some of the more copious records. I am, however, very willing to believe that it is quite capable of emendation, and am prepared, as I have said, to welcome any suggestion for its improvement. Just let me add that the sheets may be kept in one of Stone's boxes, No. 6, large quarto size, into which they fit very accurately, and in which they remain clean, orderly, and easy of reference.

Dr Keiller highly commended this system of recording cases, and thought it would be of great service in public and private practice.

Dr Macdonald entirely agreed with what had fallen from Dr Keiller. He thought that the form contained everything that was required, omitting nothing really essential in the record of the

cases. He thought all the Maternity physicians would be under a debt of gratitude to Professor Simpson for the trouble he had taken in drawing up these forms.

Dr James Young, in making some remarks on Dr Simpson's method of case-taking, asked if it was the rule in the Maternity Hospital to examine every patient before leaving the hospital, as he considered such treatment unnecessary. It was never done in private practice before taking leave of the patient, unless she complained of pain or was otherwise suffering.

Professor Simpson, in reply to Dr Young, said he considered it necessary in hospital practice to do this. In private practice it was not usual to do it, but this was at the patient's own risk.

Dr Peter Young thought very much depended on the way in which the thing was done.

Dr Simpson, in reply, thanked the members for their favourable criticism of the schedule, which he hoped might be useful in private as well as hospital practice.

Dr Keiller then brought forward his amended hospital report, which was agreed to by the Society.

MEETING IV.—JANUARY 12, 1881.

DR ANGUS MACDONALD, *President, in the Chair.*

I. *The President* exhibited (1.) the SKULL of a HYDROCEPHALIC CHILD, which he had lately obtained through the kindness of Dr Elder. The patient, an advanced multipara, had been several days in labour, but only sent for Dr Elder at midnight on the 15th December last. At that time it was impossible to make out the exact position of matters, as the head, which evidently presented, was situated high up, whilst the membranes protruded through the partially dilated os in a sausage shape. As the pains seemed more irritating than effective, Dr Elder administered an opiate. He again saw his patient at 4 A.M., when he found the case had made but little progress. About 7 A.M., the waters having now ruptured, Dr Elder, with the help of a nurse only, tried to apply forceps, but failed to get them to lock. He now, however, felt satisfied there was disproportion between the head and the pelvis, and thought that it was most probably due to hydrocephalus. He now asked me to see the patient with him. I accordingly provided myself with a small trocar and with Tarnier's forceps, and went to see the patient. On arrival I found the cervix nearly completely open, the fontanelles widely gaping, and by external palpation and double manipulation demonstrated that the head extended to nearly the umbilicus. I now punctured the hydrocephalic head. A large quantity of clear serum was rapidly discharged. The head collapsed immediately, and with the aid of

pressure upon the fundus the uterine efforts were able to complete delivery. The head admitted afterwards about 80 ounces of fluid to distend it. The skull measures, now that it is stuffed—occipito-frontal, 7¾ in.; occipito-mental, 7½ in.; biparietal, 6¼ in.; bi-temporal, 5⅞ in. After delivery we were able to demonstrate the effects which over-distention of a hydrocephalic head exerts upon the upper part of the cervix, as shown by Bandl, and which was lately made the subject of a communication by me to this Society. Before delivery the parts felt quite thin over the entire head, so much so that we did not care to manipulate freely. After delivery, on passing the fingers through the outer os uteri, they entered into a huge thinned and paralyzed cavity which had held the head, and which chiefly occupied the anterior and lateral portions of the cervical segment. It was impossible by feel to tell whether throughout this cavity the uterus was or was not ruptured, as its surface communicated no resistance and was in a marked contrast to the lower part of the body which bounded it superiorly, and which was firm and well contracted. We could only infer from other symptoms that the uterus was unruptured. The patient made an excellent recovery. (2.) The BODY of a CHILD on which he had lately performed craniotomy. The patient was a primipara, æt. 34, and was attended by a student connected with the Northern Dispensary. There was no special sign of rickets upon her general build, and the only evidence we could find of any deforming influence acting upon her was an illness when she was 20 years of age, the result, as she believed, of ill-treatment at the hands of a stepmother. On account of this illness she was confined to bed for twelve months, and even after that period could only walk double for a considerable time. I was first asked to see her by Dr Chapman at 9 P.M. on 12th of December last year. The patient had been a long time in labour; the head was high up above the pelvic brim, and not offering to engage in it. The occiput, by external manipulation, could be made out to point towards the left. The outer os was about two-thirds dilated, and was dilatable. The pelvis was markedly rickety in shape; the sacral promontory was much advanced forwards, the bone being bent round its third piece so that the upper end was rotated downwards and forwards, and the lower upwards and forwards. The cord was presenting and pulsating in front of the head. The external measurements were as follows:—External conjugate, 7 in.; distance between the anterior superior iliac spines, 9⅜ in.; distance between the iliac crests, 9⅞ in.; internally the diagonal conjugate measured barely 4 in. From these measurements it was inferred that there might be 2¾ to 3 inches of a true conjugate, and accordingly it was proposed to attempt delivery by version. It was soon found that the measurement of the internal conjugate was wrong by half an inch at least, and that I could not push my hand through the brim to seize a foot, though I very nearly

succeeded in doing so. Meanwhile the cord prolapsed and ceased to beat. Being satisfied that it was now impossible to bring a living child through the brim, if, indeed, the child were still alive, I proceeded to perforate, using Braun's trepan perforator, which worked well. The skull, as you will see, required to be very greatly broken down before it passed the pelvis. There was next found extreme difficulty in getting the shoulders through. On carefully measuring after delivery with the hand, I found the conjugate was not over 2¼ inches.

II. *Dr J. Halliday Croom* read his

QUARTERLY REPORT OF THE ROYAL MATERNITY AND SIMPSON MEMORIAL HOSPITAL.

I HAVE to report that during my term of duty, ending 31st October 1880, 55 women were delivered in the Hospital. Of these 26 were primiparæ, 29 multiparæ. Average age of primiparæ was 22 years, of multiparæ 28 years. 55 children were born—34 males, 21 females. The primiparæ gave birth to 16 males and 10 females; the multiparæ gave birth to 18 males and 11 females. Duration of labour in primiparæ: 1st stage, 10 hours 50 minutes; 2d stage, 2 hours 37 minutes; 3d stage, 11 minutes. Average duration of entire labours, 13 hours 39 minutes. Duration of labour in multiparæ: 1st stage, 8 hours 10 minutes; 2d stage, 1 hour 48 minutes; 3d stage, 12¼ minutes. Average duration of entire labour, 9 hours 42 minutes. Of the presentation and position, 50 (or 90 per cent.) were vertex, arranged thus: L.O.A., 40 = 72 per cent.; R.O.P., 8 = 14 per cent.; R.O.A., 2 = 3 per cent.; L.O.P., 0. There were 5 preternatural, as follows:—2 breech cases: L.S.A., 1; R.S.P., 1: 2 footling cases. In one premature case the dorsum of fœtus presented.

Instrumental Labours.—Forceps were applied 10 times, *i.e.*, 1 in 6. The following is a short record of each case:—

Low Forceps Cases.—1. Primipara. Vertex, L.O.A. Head, after full dilatation of os and rupture of membranes, with strong pains, was delayed on floor of the pelvis for 4 hours. Slight perineal tear. Fœtus alive. Mother well.

2. Primipara. L.O.A. Weak, anæmic patient; exhausted by protracted 1st stage (25 hours). Had inertia in 2d stage for 4 hours. Slight perineal tear by shoulders. Fœtus alive. Mother well.

3. Multipara. L.O.A. 1st stage, 20 hours; 2d stage, 6¾ hours; during last 3 inertia. Slight tear of fourchette. Fœtus alive. Mother well.

4. Primipara. L.O.A. 1st stage, 9½ hours. Head rapidly descended to floor, and remained there for 3 hours. Very rigid external parts. Fœtus alive. Mother well.

5. Primipara. Owing to the sudden development and rapid spread of emphysema, forceps were applied. Fœtus alive. Mother well.

6. Multipara. R.O.P. 2d stage, 5½ hours. Arms under chin, causing extension and delay. Fœtus alive. Mother well.

7. Primipara. L.O.A. 1st stage, 8 hours; 2d stage, 4½ hours. Rigid perinæum and ostium vaginæ. Fœtus alive. Mother well.

High Forceps cases:—There were three.

1. Primipara. L.O.A. Head delayed at brim for 6½ hours in 2d stage owing to a contracted brim. C.D. 3½. A. R. Simpson's traction forceps applied, and delivery effected with ease and rapidity. Fœtus alive. Mother well.

2. Primipara. R.O.A. Slight contraction at brim. Occiput hitched at brim, and delayed, after rupture of membranes and dilatation of os, for 3 hours. Fœtus alive. Mother well.

3. Multipara. L.O.A. Head at brim in 2d stage for 7½ hours, owing to obliquity of uterus, with passages hot and dry. Fœtus alive. Mother well.

Mortality.—Maternal, 2 septicæmia. Fœtal, 6 still born, all of which were putrid. Infantile, 4: 1 overlaying, 1 hydrocephalus and spina bifida, 1 hæmorrhage from cord, 1 prematurity of birth. All the breech and forceps cases lived.

Puerperium.—In 46 women the puerperium was absolutely uncomplicated. In 7 there was slight and inconsiderable increase of pulse and temperature. In 1 case cystitis and perinephric abscess was developed. There was 1 case of parametritis. 1 patient suffered from albuminuria with uræmic coma. Two women succumbed to septicæmia, one of whom was delivered during the previous term, and had in addition a phlegmasia dolens.

The following two cases are deserving of special record.

Case of Emphysema. — Isabella Stewart, aged 22, primipara. Patient was admitted on the evening of 11th October, having had some few irregular pains during the day. At about 1 A.M. on the morning of the 12th labour began. The pains, being frequent and feeble, continued during the day, the os dilating very slowly. Three twenty-grain doses of chloral hydrate were administered during the day on account of the rigidity of the os, and at 8 P.M., and again at 9 P.M., one grain of opium was given. Shortly after this the os was about the size of a five-shilling piece and rigid, the head lying transversely, with the occiput to the left. The os continued slowly to dilate, the pains being still somewhat feeble, until 7 A.M. on the 13th, when, the os being fully dilated, the membranes were ruptured, the head now lying in the right oblique, with the occiput anterior. The pains now became more severe, and by 8.30 A.M. the head was on the perinæum, attempting with each pain to emerge, receding during the intervals. This state of matters continued till 9.50, when the right eyelid of the patient was observed to swell very rapidly, and in a few minutes the right eye was com-

pletely closed by the puffiness of the eyelid. The swelling meantime was observed over the right side of the face, head, and neck, being especially marked in the supra-clavicular region and under the jaw. Soon it was observed on the left side and in the same locality, but less marked. Below the clavicle the swelling extended to the level of the third rib. All over this swelling a feeling of crepitation was produced on pressure with the finger. There was no pitting on pressure. At 10.10 A.M. forceps were applied, and the child delivered, the perinæum being slightly torn. The patient did not complain of any pain during the occurrence of the swelling. She remained in the same condition during the day.

Progress.—On the evening of the first day after delivery the emphysema was considerably lessened, and by the fifth day it had entirely disappeared. Patient for eleven days after delivery was unable to pass her water, and required the constant use of the catheter. She complained of pain when the catheter was used. On examination it was found that the fourchette had not been torn through the middle, but had been ruptured at one side so as to leave a triangular raw surface on the inside of the left labium. This surface granulated and healed before the dismissal of the patient. She had, some weeks before delivery, suffered from a similar temporary emphysema from straining at stool.

Case of Albuminuria.—Mrs Sutherland, æt. 40, twelfth pregnancy; last catamenia(?). Admitted at 2.30 P.M., 20th September; delivered 23d September of a premature living male child (6–7 month) weighing 3 lb. 11 oz. The patient, a large, powerful woman, was removed from the Buchanan Ward, Royal Infirmary, to this hospital on the afternoon of the 20th September. She was at this time in a semi-comatose condition, being roused with great difficulty sufficiently to answer in monosyllables simple questions; breathing somewhat stertorous, pupils slightly contracted. The abdominal walls were loose and flabby, and slightly projecting; fundus felt at the level of the umbilicus. *Per vaginam*, the os high up, looking backwards, admitted easily the middle finger-tip. Owing to the restless state of the patient further examination was not made. Urine turbid, high-coloured, large mucous deposit, acid; sp. gr. 1030; albumen ¾. Numerous tube-casts, mostly medium and small-sized, hyaline, some granular. Two drops of croton oil were administered, and digitalis fomentations applied to the loins; milk diet; pot. acet., ʒj. every four hours. During the night she was extremely restless and often violent, requiring two or three nurses to hold her in bed. The bowels were freely moved.

21*st*, A.M. — The patient still much in the same condition, occasionally becoming sufficiently conscious to answer questions. During the afternoon one-third grain of pilocarpin was given hypodermically, producing profuse sweating, commencing in head and neck and extending to the trunk, with free salivation; the

patient soon after the commencement of the sweating becoming much less restless, and for upwards of an hour was sufficiently conscious to converse. The potass. acet. and digitalis continued during the day. In the evening she relapsed into her former condition, and at midnight dry cupping was performed over kidneys without marked effect. The quantity of urine passed was small, but could not be ascertained, as it was passed in bed.

22*d Sept.* — Urine alkaline; sp. gr. 1029; albumen ¾; no tube-casts discovered. Condition unaltered. Pilocarpin injection of one-third grain repeated on two occasions with similar effect. During the evening there was slight hæmorrhage, and on vaginal examination the os was found to have somewhat dilated and was very soft. During the night the patient was again exceedingly violent, and was with difficulty kept in bed.

23*d*.—At 5.30 the membranes ruptured. The os was found fully dilated, the back of the child presenting, the spines of the vertebræ running in the transverse diameter of the pelvis, nearer the symphysis than the sacrum, the trunk of the fœtus being jammed down into the pelvis transversely, the head lying in the left iliac fossa. By combined internal and external manipulation one foot was drawn down, and then the other, and delivery thus effected, with the aid of expression, without difficulty. Delivery had no effect on the mental condition of the patient.

24*th Sept.*—Urine slightly turbid, alkaline, albumen ½; a few tube-casts (hyaline) and one blood-cast. Patient less restless, still semi-comatose. Treatment continued, along with tr. ferri mur. and infus. quassiæ.

26*th*.—Urine acid; sp. gr. 1032; albumen a trace; no tube-casts. On the evening of this day the patient, for the first time since admission, was thoroughly roused from her semi-comatose condition, into which she did not again fall. She did not at any time show any convulsive symptoms. A small trace of albumen, such as is almost constantly present in the urine of puerperal women examined here, remained during the rest of her stay in hospital, but no more tube-casts were discovered. During the second week of her puerperium she suffered from boils, which appeared on the buttocks and upper part of thighs; but though she recovered strength very slowly, she had no other untoward symptoms.

Extern Cases.—There were 143 women delivered. Labours were classified:—Natural labours, 128; preternatural, 4; complex, 2; abortions, 6; laborious, 3.

Record of positions valueless, owing to the observations being made by students only. *Preternatural*, 4 footling cases. *Complex labours*, twins, 1. Forceps in four cases—1. Head remained in cavity between R.O.P. and transverse, exhaustion, head delivered R.O.P.; 2. Inertia; 3. Rigid external parts; 4. Inertia and exhaustion. *Mortality*—maternal, *nil;* fœtal, 12; infantile, 1.

Case of Minor Hydrocephalus and Cephalotripsy.—Mrs Burns,

æt. 36, primipara; delivered 19th October, R.O.P., male child, dead. On 18th October patient was seen by two pupils, who found the woman in labour, os about the size of a florin, and head presenting. As the labour made no progress for twenty-four hours, the resident surgeons were sent for, who diagnosed a minor degree of hydrocephalus, with the cervix thinned out over the head, and the os dilated to the size of a claret-glass. Dr Croom was requested to see the case, and confirmed the diagnosis. Under his superintendence Mr Huxtable applied forceps; but as the forceps threatened to slip, a trocar and canula was introduced, and twelve ounces of fluid drawn off. Further traction with the forceps was now made without effect; the head was accordingly perforated with the ordinary perforator, and as it still refused to be dragged through the brim, the cephalotribe was applied, and compression and extraction accomplished.

I beg to thank my residents, Dr Limont and Messrs Huxtable and Hewetson, for their unwearied endeavours to carry out the careful antiseptic precautions to which I referred in a paper at a former meeting of this Society.

Dr Simpson congratulated Dr Croom on his presenting the clearest and best systematized report that had been presented to the Society. He was sorry that they had still a considerable mortality in their hitherto most unfortunate Hospital. He was interested in the case of albuminuria, which he had seen with Dr Sidey. At first he took the patient into the Buchanan Ward in the Royal Infirmary, as he hesitated somewhat at sending her into the Maternity. He had seldom seen a more hopeless case, considering the amount of albuminuria and the fever and weakness. The case was further interesting as being albuminuria developed in the twelfth pregnancy. The patient also had purpuric spots on her legs, showing the bad state of her blood.

Dr Craig thought that in all reports names should be deleted.

The President agreed with the Society as to the value of the report. It was curious to note the number of fœtal deaths among the extern cases, and the absence of maternal deaths. He hoped that they would soon have a trimestre in the Hospital without any maternal deaths.

III. *Dr Hart* read his paper

ON THE SHAPE OF THE EMPTY FEMALE BLADDER.

The empty female bladder may present one of two shapes. In the large majority of specimens figured it forms with the urethra a Y shape on sagittal mesial section. The oblique legs of the Y may be about equal in size, or the posterior may be shorter (Figs. 1 and 2). This form is so common that it has been accepted hitherto

by all authors as the normal one. In certain cases, insignificant in number as compared with the former, the empty bladder cavity forms with the urethra a continuous tube on vertical mesial section (Fig. 3). As a whole, in such cases, it is oval in shape, corrugated, and firm to the touch. This latter shape is constantly the one found in the lower animals, such as the rabbit and dog, and is the only one I have ever seen in the human fœtus (Fig. 4). If, therefore, the pelvic floor of a woman be viewed on its peritoneal aspect, the fundus of the empty bladder will be found to be almost always large and concave, while in a few cases it is small and convex. In the one case, the inner surface of the upper segment of the bladder, large in area, is in contact with the inner surface of the lower segment; in the other, the anterior and posterior walls, small in area, touch one another.

To-night I wish to consider why we should have the bladder presenting two such sharply contrasted forms, to attempt to settle which is the normal one, and to consider the whole question in some practical bearings.

The anterior, posterior, and lateral relations of the bladder are of interest. Anteriorly it is separated from the pubis by a large amount of fat—the retropubic pyramidal fat (Figs. 1 and 2). Posteriorly the connexion between it and the uterus and upper part of the vagina is also loose. Laterally the bladder is more fixed. The same facts as to looseness of anterior and posterior connexions holds good for the male bladder.

The arrangement of the unstriped muscular fibres of the bladder is on the same plan as those of the uterus, *i.e.*, we have external longitudinal unstriped muscular fibres, with their fixed point below; circular ones running at right angles as well as obliquely to these, and an internal longitudinal layer below the submucous coat. It is evident that their unhindered contraction will give the bladder the cylindrical form which I have described as the one rarely found. So far, then, as the normal arrangements of the bladder go, we see provision made for muscular contraction which shall ultimately bring the anterior and posterior walls, diminished in area, in contact.

I have now to take up the Y-shaped bladder and explain its occurrence. This can be beautifully studied in the specimen I here show, of which figure 1 is an accurate drawing. In this specimen the Y shape which the bladder forms with the urethra can be well seen. The causation of this shape is as follows:—

It can be readily seen that the uterus is anteflexed. Starting from the posterior angle of flexion, and running to the left and upwards, thickened bands can be seen, the cicatrized left utero-sacral ligament. The shortening of the ligament has had a four-fold effect. It has dragged the uterus backwards and to the left side. Inasmuch as the cervix is fixed in the pelvic floor, and the fundus surrounded by intestine, the effect of this backward drag

has been specially spent on the uterine insertion of the ligament *i.e.*, the uterus has become anteflexed. A simple experiment will make this clear. If a gum elastic bougie be fixed at either end, and then be grasped between the finger and thumb about two inches above its lower end and pulled back, the bougie will become flexed or bent. In the fourth place, the bladder has been pulled back so as to make its retropubic attachment tense and pull its posterior wall behind the urethra, *i.e.*, to give it the Y shape seen.

Fürst has published a beautiful section of a uterus less anteflexed, and a bladder less distorted, bearing out exactly the explanation already given (Fig. 2).

The evacuation of the urine seems to be accomplished by the contraction of its unstriped muscular fibre and the action of intra-abdominal pressure. Both of these are effective only when the empty bladder can assume such a shape as figure 3 shows, *i.e.*, when the anterior and posterior walls of the bladder diminish in area and come together. It is evident that when the bladder is tied back as already described (Fig. 1), its contraction is minimized, and the expulsion of the urine must be chiefly accomplished by intra-abdominal pressure. In one so-called case of hysterical retention I found the uterus anteflexed and drawn back so far as apparently to account for the patient's inability to micturate oftener than once in one or two days. At the same time, I have seen patients in a like condition where urination was normal.

The practical points I wish to bring out are as follows:—It is now undoubted that the normal uterine position is one of inclination in front of the axis of the brim. I do not believe, however, that the anteversion is so excessive as most German authors allege, as the amount of anteversion they believe in renders necessary the figuring of the Y shape of the bladder and urethra as normal.

When the empty bladder and urethra form the Y shape, as in Fig. 1, we have no vesico-uterine pouch, but a vesico-abdominal one. The less frequent shape of the bladder gives the vesico-uterine pouch.

It is evident by examination of plates and specimens that the muscular contraction of the bladder is more marked when the bladder has the cylindrical form than when it has the Y form. Braune and Heitzmann figure bladders of this shape whose walls are antero-posteriorly as thick as those of the unimpregnated uterus (Figs. 3 and 5). In no bladder with the Y shape is this nearly the case.

The conclusions advanced are as follows:—

1. The empty bladder in the fœtus has always its anterior and posterior walls in contact.

2. In the adult female the same is the normal one for the contracted bladder, but is rarely found.

3. The Y shape can, in certain cases, be traced to a dragging back of the uterus by inflammatory cicatrization, or to undue anteversion.

Fig. 1.—Vertical mesial section of female pelvis (spirit-hardened), showing Y shape of bladder (*b*). The uterus (*a*) is anteflexed and drawn back by cicatrized utero-sacral ligament.

Fig. 2.—Vertical mesial section of female pelvis (frozen). The Y-shaped bladder (*b*), and the vesico-uterine and retro-uterine pouches, neither of which contains intestine, are well seen.—(Fürst, in *Archiv für Gynäkologie*, Bd. vii. S. 407.)

a Uterus.
b Bladder.
c Rectum.

Fig. 3.—Vertical mesial section of female pelvis (frozen).—*a b*, shows the posterior loose connexion of the bladder to the cervix and vagina. The peritoneum passes from bladder to cervix at *b*. *d c* shows loose connexion between rectum and vagina, the pouch of Douglas descending to *d*. The bladder is empty, contracted, and has its anterior and posterior walls in contact.—(Braune.)

Fig. 4.—Vertical mesial section of fœtal female pelvis (spirit-hardened).—Empty bladder (*c*) is above pubis; *b* is vagina; *a* uterus cut to one side.

Fig. 5.—Vertical mesial section of female pelvis (frozen), showing contracted bladder and ante-uterine and retro-uterine pouches.—(Heitzmann.)

4. The Y shape is, however, found normally in some cases, *e.g.*, the early puerperium (Rüdinger).

I have not given a vertical section of the female pelvis with the organs placed in what I believe to be the normal posture. Satisfactory attempts, based on clinical investigations and sectional anatomy, have been made by Schultze, His, Schröder, F. P. Foster of New York, and others. At present, however, gynecologists have not sufficient data to enable them to be dogmatic in this matter. Clinical investigation of the position of the uterus bimanually gives it an excessive amount of anteversion (well seen in Kocks's plates), owing to the fact that the examiner anteverts it beyond its normal anteversion in order to grasp it, and, in addition, lengthens the vaginal walls. The question of the amount of projection of the soft parts below the pelvic outlet has still to be settled. For this reason I feel that the figuring on my part of any normal diagrammatic section would lead to error. To avoid this I have given woodcuts only of actual sections. Those who wish to see additional accurate drawings of actual specimens should also consult the atlases of Pirogoff, Legendre, and Braune, and a paper by His.[1]

Literature.

Atlases of Legendre, Braune, Rüdinger, and Pirogoff.

Barbour.—Cases of Carcinoma of the Female Pelvic Organs.—*Ed. Med. Journal*, July 1880.

Barkow.—Anatomische Untersuchungen über die Harnblase des Menschen.—Breslau, 1858.

Crédé.—Beiträge zur Bestimmung der normalen Lage des gesunden Gebärmutter.

Foster.—A Contribution to the Topographical Anatomy of the Uterus and its Surroundings.—*Am. J. of Obstetrics*, January 1880.

Hart.—The Structural Anatomy of the Female Pelvic Floor. Appendix, Note C.—Edinburgh, 1880.

His.—Ueber Präparate zum Situs Viscerum mit besonderen Bemerkungen über die Form und Lage der Leber, des Pankreas, der Nieren und Nebennieren, sowie der Weiblichen Beckenorgane.—*Archiv für Anatomie und Physiologie* (His, Braune, and Du Bois-Reymond), 1878, S. 53.

[1] Since writing the above, my friend Dr Milne Murray has made the ingenious suggestion that the bladder has its systole and diastole just as the heart has; that the contracted form in Figs. 2 and 3 is the bladder in systole, and the Y shape in diastole. Of course, this holds good only for cases where there is not posterior pelvic inflammatory cicatrization. One interesting point should be noticed, viz., that the women in whom Braune figures the bladder in systole, *i.e.*, contracted, died violent deaths by suicide (hanging). It is evident that this systole of the bladder, if it exists, must draw the cervix forwards. There is no clinical evidence on these points; and clinical investigation, from its difficulty, would be apt to lead into fallacy. At the same time, carefully conducted examination would lead to some interesting results in regard to urination—a subject not as yet well understood.

Kocks.—Die normale und pathologische Lage und Gestalt des Uterus sowie deren Mechanik.—Bonn, 1880.

Schröder.—Noch ein Wort über die normale Lage und die Lageveränderungen der Gebärmutter.—*Ibid.*, Bd. ix. S. 68.

Schultze.—Ueber die pathologische Anteflexion der Gebärmutter, etc.—*Archiv für Gynäkologie*, Bd. viii. S. 134.

Turner.—Introduction to Human Anatomy, p. 797.

Winckel. — Die Krankheiten der Weiblichen Harnröhre und Blase.—*Billroth's Handbuch.*

For other literature see Foster's paper.

Professor Simpson had listened with great pleasure to Dr Hart's able and original paper. It was interesting to note that apposition of the anterior and posterior walls was the normal relation in the case of the other pelvic viscera when empty. Thus in the empty uterus, rectum, vagina, and perhaps the stomach, the anterior and posterior walls touched; and this prepared us to believe that when the conditions of the bladder were normal, the anterior and posterior walls would be found in apposition when it was empty. He hoped Dr Hart would continue to work out this subject.

Dr Halliday Croom was much interested in this as in all Dr Hart's papers on the sectional anatomy of the female pelvis. To-night he felt that Dr Hart had contributed a valuable addition to our knowledge of the position and shape of the empty bladder. It was difficult to discuss an anatomical paper such as the present without a careful study of it. Dr Hart had shown that under certain circumstances the empty bladder was Y-shaped, viz., that in its collapsed condition it had a superior and inferior surface which were in apposition. In the diagram with which he illustrated this he pointed out that the condition of matters was pathological, viz., the uterus was anteflexed, and the cervix drawn back by a shortened utero-sacral ligament. Compared with the diagrams, say of Kolrausch or Savage, that of Dr Hart was very different. In these ordinary diagrammatic representations the bladder was round and thick. He was prepared to be shown that, so far as these diagrams represented the empty bladder as circular, they were wrong; but he thought that the empty bladder was not, as Dr Hart had shown, a collapsed, shapeless sac, but in the uncontracted condition maintained a certain firmness and an ovoid form. He thought it was hardly possible from a vertical mesial section to draw a correct idea of the shape of the empty bladder in life. He would have expected to find the anterior and posterior walls in apposition, as shown in the diagram of Heitzmann to which the author had drawn attention. Again, he was struck with the remarkable thinness of the bladder walls, a condition which the sections showed well, but one to which his attention had not been previously specially directed. He was glad Dr Hart had

referred to the height and mobility of the fundus uteri, as he thought this was a point not sufficiently insisted on, more especially in making a conjoined examination of the uterus. As usually shown, the inexperienced practitioner might easily press the tips of the fingers of his external hand over the brim of the pelvis, and fail to find a uterus, although, by passing his hand a little farther up the organ would readily become apparent.

The President remarked that he had listened with much pleasure to Dr Hart's original and thoughtful paper, and hoped it was an earnest of still more important contributions from him to the anatomy and physiology of the bladder. They all knew what Dr Hart had done for the perinæum, and he hoped that this was the commencement of a similar series of papers upon micturition; for, notwithstanding all that had been done for that subject, it must be confessed that the theory of micturition, in the human female, at any rate, was in a very unsatisfactory condition. The idea that the bladder, when empty, was a rounded or globular mass, as referred to by Dr Croom on the authority of Savage's plates, was, it appeared to him, untenable; for if that was the condition of the empty female bladder, then we ought to be able, with the bimanual manipulation, to feel the tumour it formed and to map out its rounded outlines. But this we could not do in the case of the healthy female bladder. No doubt, when the organ was thickened from disease one could do so. But he had searched, in a case he examined this morning, to see whether he could make out the outline of the organ, with special reference to the discussion to-night; but with the greatest care he could not define its limits. Then a favourite clinical question with him to students depended on the well-known fact that the sound will enter an empty bladder quite as far as it will a full one. On asking students how far a sound will enter the female bladder, the usual answer was, that this depended upon whether the organ was full or empty. Putting the matter to the test of experiment, it was easy to show that this was an entire mistake. It would thus appear that the real condition of the empty bladder was one of very low contraction, or rather of collapse. The anatomical facts pointed out by Dr Hart, and the majority of the sections exhibited, would tend also to show that the attachments of the bladder and the distribution of its muscular fibres are such as to lead us to expect that the normal condition of the empty bladder is such that its anterior and posterior walls should lie in apposition. He admired Dr Hart's exposition of this part of his subject much. He was also interested in the demonstration of the Y-shaped outline of the empty bladder, with Dr Hart's explanation of its probable mechanism. He was well acquainted clinically with the backward prolongation of the bladder as a troublesome pathological condition which was usually attributed to downward traction of a pouch of the bladder by the heavy uterus. But he did

not understand that it was so common in a minor degree as Dr Hart's drawings from various sources appeared to demonstrate. He was hopeful that much good would come out of this inquiry, and that Dr Hart would ultimately throw much light into this dark region.

IV. *Dr Croom* then read for *Dr Ranking*

SOME ACCOUNT OF A VERY SEVERE CASE OF MEMBRANOUS DYSMENORRHŒA.

T. S. R., a lady, unmarried, æt. 38.

History.—Catamenia began at twelve years of age, always irregular and profuse, lasting ten to fourteen days, but painless until age of 21. After prolonged exposure to cold on second day of period the flow stopped, and on its next return there was great pain, which has been the case more or less ever since. In the spring of the following year suffered from dragging pain in back and leucorrhœa almost continuously, debility, frequent headaches, and increased dysmenorrhœa. Six years later had measles severely, followed by vaginitis and expulsion of membranous casts both from vagina and rectum, repeated at intervals of about ten days for six months, when it was replaced by a thick, purulent, offensive discharge. There was great debility, with frequent sickness and loss of flesh. In the following spring (1868) an examination was made, discovering extensive ulceration, which had destroyed part of the cervix, and caused irregular cicatricial contraction of the vagina, also retroversion. In 1870 membranous dysmenorrhœa was detected. Treatment by tents and intra-uterine applications of iodine gave some relief, but after a short time was abandoned. During the following six years was treated as opportunity offered, became steadily worse, and had floodings and swelling of left thigh. In 1877 she came under my notice, complaining of pain in back, gnawing supra-pubic pain, especially before expulsion of membrane. Bowels and bladder very irritable. Frequent severe hemicrania. Total inability to retain anything on the stomach at the time of the period, which returned every five weeks. There was also evidence of chronic septicæmia. Had lately suffered during and after each period from severe convulsive movements of both legs. At this time the following condition locally was noted:—

Vagina.—Orifice small. Hymen absent. Mucous membrane totally destroyed throughout, the whole passage resembling a well-marked vaccination cicatrix with frequent puckerings. At the roof is a very dense annular cicatricial band with a hard, sharp edge, and barely admitting the point of the forefinger. The roof is "flush," the position of the cervix being recognised only by a dimple, which through the speculum shows a small protrusion of

florid mucous membrane. The sound passed, after considerable curving, with difficulty directly backwards. The fundus is in Douglas's pouch, enlarged and immovable. During the summer membrane began to be discharged during the menstrual interval as well as at the period. In spite of the increased frequency of expulsion of membrane, the quantity and thickness of that expelled during menstruation was not diminished. In consequence of the repeated removal of membrane, the distress usually observed only during the period recurred once, or even twice, during the interval, and the constant vomiting and pain caused great malnutrition. The pelvic congestion increased; both ovarian regions became prominent and very tender; the left leg swollen and very painful, with great prominence and tenderness over the femoral vein. The vaginal walls were so œdematous that the tube of a Higginson's syringe could not be introduced. Menstrual hæmorrhage almost *nil*. During the early part of August the symptoms were in some measure relieved by leeching round the vaginal orifice, but no local treatment was possible. On 21st August 1877 the following treatment was adopted:—1. Spinal hot bag to dorsi-lumbar spine for two hours thrice daily; 2. Donovan's solution, ten minims thrice daily; 3. Generous diet, with stimulants; 4. Rest in bed upon an inclined plane, sloping down from the feet. This last had been tried off and on for two years. The thermometer showed a nightly rise, and there were occasional night sweats.

This treatment was continued without interruption (except that the bag was not used during the menstrual flow) until November 17th, when Donovan's solution was stopped, as it was thought to aggravate the hemicrania and other neuralgic symptoms. During this time the effects of treatment were most gratifying. *The dysmenorrhœal membrane was greatly reduced both in quantity and consistence.* The membrane passed during the period immediately preceding treatment was dense, leathery, and of the thickness of very stout mill-board. Microscopically it showed the usual appearances, but with a dense fibrinous basis. It became less dense, more cellular and bloody, until in November it was transparent, almost bloodless, and so thin and broken that only one piece could be saved about the size of a shilling. A series of specimens taken from each period during treatment are in my possession. *The pelvic congestion was lessened*, as shown by—

1. Diminished pain and swelling of the thigh, and sinking of femoral vein.

2. Marked diminution of swelling of vaginal walls. This was one of the earliest effects. Whereas, before treatment, the tube of a Higginson could not be passed, during treatment there was never any difficulty after the first few days.

3. Partial return of swelling in leg and abdomen when the bag was used less steadily.

4. Diminished ovarian disturbance and swelling.

Remarks.—The interest of this case turns upon its very unusual severity, the complicated nature of its causation, and, as far as I am aware, novel method of treatment. The patient was without doubt a virgin, and any syphilitic taint was out of the question.

It may be thought that much of the benefit is to be traced to the prolonged rest and postural treatment, but this cannot, I think, be upheld in the face of the fact that both these means had been tried steadily for even longer periods without any such good effect. Moreover, benefit sometimes accrues from a similar use of heat to the spine in cases where, during the climacteric, periodical congestions occur in the pelvic organs, whilst the menstrual flow is arrested or uncertain. That the alteration in the membrane was at least in great measure due to the Donovan's solution can scarcely be questioned.

The lady was unhappily again exposed to a severe chill during February 1878, and became nearly, if not quite, as bad as before, being unable to take treatment. In conclusion, it may be stated that this patient is quite intolerant of iodine in any other form.

Dr Simpson would have liked to have studied the case in detail. The swelling described seemed curious. In the treatment Dr Ranking had laid stress on the use of Donovan's solution. In his experience no medicament was so useful in membranous dysmenorrhœa as arsenic. The case was an interesting and important one.

Dr Croom was interested in the record of this case. The care and trouble bestowed on the case reflected much credit on Dr Ranking. The report was a valuable one. So far as his experience went, one got the best results in such cases from dilatation with tents and the application of counter-irritants to the endometrium.

The President thought such a carefully recorded case valuable. He remembered one case in his practice somewhat similar.

MEETING V.—FEBRUARY 9, 1881.

Dr BRUCE, *Vice-President, in the Chair.*

I. *Dr Halliday Croom* showed a FŒTUS on which he had performed cephalotripsy. Forceps had been ineffectually applied before he saw the case. The conjugate at the brim was under 3 inches, and as the transverse was also lessened, he deemed it best to perforate.

II. *Dr James Young* showed a CAST of the right arm, illustrating what has been called intrauterine amputation. The case was that of a young man, æt. 26. The carpal bones were perfect, and on the stump of the wrist were five rudimentary fingers, the thumb being

about the size of a large pea. He could button and unbutton some of his clothes. The cast he now exhibited had been taken by Mr Brodie.

III. *Dr James Young* also narrated a case where the umbilical cord measured only $10\frac{1}{4}$ inches when completely uncoiled and put on the stretch.

IV. *Dr R. Milne Murray* then read his paper

ON A FORM OF POST-PARTUM INCONTINENCE OF URINE, AND ITS TREATMENT BY FARADAISM.

THE reasons which have induced me to lay the following remarks before the Society are two:—*First*, that I may be enabled to make a contribution to the growing and ever-increasingly important subject of electro-therapeutics; and, *second*, that I may thereby have an opportunity of offering a suggestion as to the *rationale* and treatment of an untoward sequela of abnormal labour, namely, *incontinence of urine*, a condition causing misery to the patient only equalled in degree by the difficulty which its cure often presents to the obstetrician.

The time is not far distant when incontinence of urine occurring post-partum was regarded by the gynæcologist as almost beyond the reach of curative skill; and although the perfection of the operation for vesico-vaginal fistula has done much within recent years to increase the proportion of cures, yet cases are from time to time arising to which none of the ordinary modes of treatment are adapted, and which consequently give rise to a condition of prolonged misery to the patient. It is to the treatment of a certain variety of these cases that I would direct the attention of the Society to-night, and I trust a suggestion for the relief of such cases may be deemed a sufficient apology for so occupying your time.

In order that I may be able to indicate the precise nature of the cases suitable for treatment by galvanism, it may be well that I should glance for a moment at the general *causes* of incontinence of urine. These seem to me to be divisible into two classes:—

1*st*, Causes consisting in changes or conditions *outside* the bladder and urinary mechanism. These are chiefly mechanical in effect, and among them may be mentioned—*a*, forward displacement of the uterus, whether gravid or not; *b*, tumours of the pelvis pressing on the bladder and preventing its distention; *c*, inflammatory processes affecting the pelvic peritoneum or fascia, and causing contraction of the vesical surroundings. Such conditions as these affecting the bladder are remediable by other means if remediable at all, and are obviously not within the limits of galvanic treatment, and may consequently be left out of account at present.

2*d*, The second class of causes are those consisting in changes or

conditions within the bladder or urinary mechanism, and may be divided into *four* groups — *a*, the presence of foreign bodies within the bladder, such as calculi, polypi, etc.; *b*, diseased conditions affecting the walls, such as cystitis, malignant disease, etc.; *c*, injuries causing structural changes in the bladder or urethra; *d*, changes in the nervous apparatus.

The conditions arising from the first and second of these groups (foreign bodies and diseased states) are likewise obviously not suited for galvanic treatment, and it is thus among the third and fourth groups that we must look for those varieties of incontinence which may offer favourable indications for the application of electro-therapeutics. To-night I wish to confine myself entirely to those cases arising from injury occurring during labour.

"That the danger of a labour to mother and child varies with its length," is a point on which all modern obstetricians are practically agreed. But while a certain amount of risk to the mother, at any rate, accompanies an undue prolongation of the first stage, it is certain that by far the greater proportion of the danger results from the retardation of the second stage. It is not necessary that I should now enter into any detailed account of the various sources of danger to which both mother and child are exposed by delay of labour at this stage; but there can be no doubt that one of the most frequent and most serious causes of mischief is that produced by the prolonged pressure of the fœtal head on the soft part of the pelvic canal. Why this risk is so serious in the second, while it is absent almost entirely in the first stage, admits of easy explanation. When, from some want of harmony between the three factors of labour, a delay occurs in the second stage, the presenting part, having lost the protecting function of the fluid wedge formed by the bag of membranes, is brought to bear *directly* on the soft parts forming the wall of one or other aspect of the parturient canal. If this pressure be unduly prolonged, or if it be not in proper time relieved by suitable interference, it may cause an amount of subsequent sloughing of tissue which, if it affect the anterior vaginal wall, may give rise to a complete perforation of it, opening into the urethra or bladder, and giving rise to urethro or vesico-vaginal fistula. This condition will, of course, cause incontinence of urine so soon as it is established, but happily in by far the greater proportion of cases a cure is obtained by the operation already referred to.

But, on the other hand, the slough which separates may not involve the whole thickness of the vesico-vaginal wall.

A considerable thickness of the vaginal aspect of the septum may separate, leaving a thinned wall and an ulcerated surface, which, when it heals, will do so by the development of a considerable amount of fibrous tissue. Supposing that the pressure during labour involved that part of the vesico-vaginal septum which corresponds to the sphincter vesicæ, the sloughing process may go

deep enough to destroy a considerable amount of the muscular tissue forming the sphincter, leaving it thin and relaxed, and, of course, materially defective in contractile power. Moreover, it would be likely that the gradual contraction of the cicatricial fibrous tissue on the vaginal aspect might cause a further difficulty, and, by displacing the relations of parts, render the action of the sphincter still more ineffectual.

Such a condition, it will be seen, while not involving a destruction of tissue sufficient to constitute a true fistula, might, from the grave interference which it would cause with the function of the sphincter, result in a condition of incontinence no less inconvenient and distressing than that caused by the deeper lesion.

But there is yet another form of mischief which may follow such unduly prolonged pressure. It is quite easy to conceive that the sphincter, caught between the head and the pubes, might be subjected to an amount of violence from the grinding action of the head as to cause an immediate paralysis of the nerve terminations in it, so that its contractile power might be thus entirely destroyed at once. A condition like this would render itself evident soon after delivery, as incontinence would follow as an immediate result.

Such a state of matters is illustrated by the history and condition of a patient who applied for advice in July last to Dr Halliday Croom, through whose kindness I had an opportunity of examining and treating her as an out-patient at the Maternity Hospital in August last.

Mrs R., aged 37. Married for three years. Has had two children, the last in June 1879. Complains of complete inability to retain her urine, and of its constantly trickling away by day and night. This has continued since her last confinement fourteen months ago. Her first child was premature, born six months after her marriage. She states that she carried her second to full time, and went into labour on the morning of Thursday, 19th June 1879. She was seen by her medical man at intervals during the day, the pains being moderately strong and regular. The waters broke towards evening, and her doctor saw her then, examined her, and said all was going on well, and left her for the night. The pains continued strong and regular all night, but no progress seemed to be made, and the doctor was sent for on Friday morning. He came accompanied by another medical man, and they both examined her and told her she was doing quite well.

She was seen by one of them at intervals during the day. The pains, which had been severe and regular up till Friday forenoon, now became less so, and only appeared at long intervals during Friday night and Saturday morning. Notwithstanding this, and although the labour made no progress, no interference was attempted until Sunday forenoon, when instruments were applied by another friend of her doctor's, and delivery effected. The patient

had thus been in labour for considerably upwards of seventy-two hours, and in the second stage for about sixty. She remained in bed for twelve days after delivery, during which period she noticed that the urine from the first day escaped from her constantly. It continued to do so night and day without change during the fourteen months which elapsed previous to her seeking Dr Croom's advice. Her bladder was invariably empty in the morning; and, as she expressed it, she had not slept in a dry bed since her confinement.

State on Examination.—There is a strong urinary odour about her person, and the external parts are red, swollen, and the thighs excoriated. The orifice of the urethra is pouting, red, and patent. The meatus shows a vertical slit in its upper edge about $\frac{1}{10}$ of an inch in length. The canal admits a No. 10 male catheter without any resistance whatever, and the bladder is absolutely empty. Careful sounding of the bladder gives no indication of anything abnormal, and it is not hyperæsthetic. A little urine obtained by retaining the catheter in the bladder for a little is normal, and contains no albumen or pus cells.

Per Vaginam.—The vagina is roomy, and its posterior wall is smooth. On the anterior wall, $1\frac{1}{2}$ inch from the ostium, is found a transverse depression or shallow groove, about 1 inch in length, and immediately behind it is a rounded eminence or ridge, about the thickness of the little finger, running across the wall and tapering away at both ends. The surface is smooth, and it is more resistent to pressure than the vaginal mucous folds. Firm pressure does not elicit any indication of pain in this or any other part of the vaginal wall. The most careful examination by the finger, and the repeated injection of milk into the bladder, failed to discover any fistulous opening. The uterus is normal in position, and if any prolapse of the bladder does exist, it is very trifling.

Such being the history and condition of this patient, it remains to determine, if possible, the immediate cause of the mischief. Here we have a case of complete incontinence lasting over a period of fourteen months, dating from her last confinement, not due to the mechanical pressure of any abnormal organ or structure within the pelvis, neither caused by any fistulous opening between the bladder and vagina nor by any inflammatory or other diseased condition of the vesical walls. Accordingly, the condition must be referred to the prolonged strain which the whole pelvic structure had undergone in her previous labour, the second stage lasting over three days. It would appear that the presenting parts must have exerted severe pressure on the anterior vaginal wall at a part corresponding to the vesical sphincter. This muscle had been completely paralyzed by the excessive compression which it had undergone, and had probably sloughed to a considerable extent afterwards. That a change of that nature had taken place is

proved by the abnormal state of the anterior vaginal wall already described. The incompetence of the sphincter, caused at first by the crushing to which it had been subjected, would be further increased by the sloughing process; and the tendency to cicatricial contraction which would follow healing would in no way tend to improve matters. That the mischief was first due to paralysis from pressure seems plainly shown by the fact that the incontinence was observed on the day after delivery, before a slough could have formed, but there seems no doubt that it was further aggravated by the after changes I have referred to.

When considered in relation to treatment, a case such as this would seem more grave than complete perforation would have been, for then the ordinary operation might have offered the best hopes of success. Under the circumstances only two lines of treatment seemed to present themselves for consideration:—1. To divide the vaginal wall, either through the thickened mass or through the groove of cicatricial-like tissue in front of it, and so form a complete fistula, which in healing might set up such changes as would render the action of the weakened sphincter more effective; 2. To endeavour to restore the tone of the muscular fibre,—1st, by suitable medicines, and 2d, by galvanism locally applied.

As the first mode of treatment offered a barely hypothetical chance of success, and was too "heroic" to attempt except as a last resort, it was determined to give the latter a fair trial. Accordingly she was put upon full doses of ergot, phosphide of zinc, and strychnia, etc., for upwards of a month, without showing any indications of improvement whatever, and galvanic treatment was then adopted and applied in the following way:—A black rubber catheter, No. 7, through which passed a copper wire ending in a small brass knob, was introduced into the urethra up to the neck of the bladder, and connected to one terminal of a small Faradic coil, while the other electrode, consisting of a broad copper plate, was applied over the sacrum. A current of extreme weakness, so as only to be felt by the patient, was transmitted in this way for ten minutes on August 18th, and repeated in the same manner on the three following days, the strength of the current being very gradually and slightly increased each day. On the following day, 21st August, the current was continued for fifteen minutes; and this time was increased by five minutes daily until thirty minutes were attained. The strength of the current was likewise gradually increased up to the point at which the patient could bear it. This treatment was continued in this manner from this time, for thirty minutes daily, up to the 30th October. The only variation adopted in the arrangement of the electrodes was in occasionally placing the flat metal plate on the abdomen just over the symphysis pubis.

The following notes record the progress of the case:—

Aug. 23.—After six applications. Patient states that on rising

this morning she passed about half a teacupful of urine. This is the first time she has done so since her confinement in June 1879, her bladder having been invariably empty in the morning.

Aug. 26.—The amount of urine in her bladder was considerably greater. It came away in the same constant manner during the day.

Aug. 30.—States that she retained her urine all last night, the bed being quite dry, and during the last two days she has been able to retain her urine for nearly an hour at a time occasionally during the day. Any muscular exertion or coughing causes it to escape at once.

Sept. 3.—Retains the urine now the whole night, and for upwards of an hour during the day.

Sept. 30.—Has been gradually improving since last note. Can now retain urine for three or four hours, and that, too, under moderate exertion.

Oct. 15.—Except under violent exertion or coughing, the control over the bladder is complete.

Oct. 30.—Cure seems to be accomplished. *P. V.* (same day). The redness of external parts gone, and urinary odour not perceptible. Posterior vaginal wall normal. On the anterior wall the prominence previously described seems appreciably enlarged, and feels as if it projected more into the vagina. Parts otherwise normal.

I saw her again on Dec. 29, and she tells me that she is still quite well. Now and again a few drops escape in violent coughing or other exertion, but otherwise she has no trouble whatever.

Now, it appears that the history of recovery in this case fully bears out the idea that the mischief lay in a weakened sphincter, and that the recovery was due to an increased tone and probably growth of muscular tissue induced by the systematic application of the galvanic current. Such an increase of tone and growth is, I think, quite comparable to the similar changes which occur in a voluntary muscle of the limb during galvanic treatment after hemiplegia, etc. This explanation is further borne out by the fact that the recovery was gradual, being first observed in the recumbent position, when the least strain was brought to bear on the sphincter, and a considerable time elapsing before the sphincter was able to resist the sudden pressure put upon it by a cough. Further, the absolutely stationary condition which the patient exhibited for more than a year, and the rapid improvement which followed after she came under treatment, offer a strong presumption that the change was due to the galvanism, and that it was not a mere coincidence of a natural process with an artificial interference.

Before concluding this paper I may be permitted to offer one or two hints as to the mode of conducting the application of galvanism to the bladder. The instructions given in books are not

sufficiently explicit as to some precautions, and my experience in the treatment of several cases last winter in the wards of the Royal Infirmary, under the charge of Professors Sanders, Grainger Stewart, and Annandale, and in the private practice of Dr Croom, may enable me to offer some suggestions for the benefit of any one who may think of applying it.

In the first place, the current to be employed must be of the very gentlest at first, and the increase must be slow and gradual. The bladder is often morbidly sensitive, and anything like a violent current or shock may produce very acute cystitis. In my experience it has done so on one occasion, when, through a fault in the battery, the zinc plate suddenly slipped entirely into the fluid.

In order to avoid any risk at first, it is a safe plan for the operator to pass the current through his body, which can be done by seizing one handle with the left hand and passing the moistened right hand over the back and abdomen of the patient, the other terminal being in the bladder. By pressing the hand firmly or lightly the current can be increased or diminished, and its strength is accurately estimated by the operator, while the patient is gradually accustomed to an increased power of the current. The current should be applied for ten minutes at first, and this gradually increased as the patient can bear it. It is well to have a little urine in the bladder: it serves to diffuse the stimulus, and is more agreeable to the patient than when the bladder is empty. And a final precaution must not be forgot, and that is, to stop the current before withdrawing the bougie, otherwise the most acute pain will be induced in the course of the urethra, which often remains for a considerable time.

Dr Bruce thought the Society indebted to Dr Murray for his interesting paper, as it was a method of treatment in such cases that had not yet been brought before them, and appeared well worthy of a trial. Cases of this kind, however, were rare, as labour was not now allowed by medical men to go on too long. Much more often they had cases of retention of urine. At present he had such a case in his practice, occurring after a premature confinement. Possibly galvanism might be successful here also; but, such retention being usually of a very temporary nature, the catheter would have the preference.

Dr James Young asked Dr Murray as to his experience of the use of galvanism in cases of retention of urine.

Dr Halliday Croom congratulated Dr Murray not only on an accurate and careful record of a most interesting case, but also on the cure he had effected. He thought there was not much room for criticism, as Dr Murray had so definitely described the condition of the patient, as well as the rationale and technique of the treatment. Dr Croom had seen the patient last summer at her own home, and thought from the history that it was a case of vesico-

vaginal fistula. He sent her to his clinique at the Maternity Hospital, with a view of demonstrating the case to his class. He was unable to find a fistula, and concluded the incontinence was due to some sphincter paralysis. He tried all sorts of remedies in vain, *e.g.*, ergot, strychnia, phosphide of zinc, and so on, but without any benefit. Dr Murray had suggested the galvanic treatment, and to him entirely belonged the credit of the cure. With his usual modesty, Dr Murray had claimed less credit than was his due. The case was in every sense a most gratifying one.

Dr T. D. Wilson said that Dr Murray had not differentiated sufficiently the terms Faradic and continuous current. There was a dispute as to which was better in such cases.

Dr Murray thanked the Society for their reception of his paper. He had treated one case of retention of urine successfully in the same way. Dr T. D. Wilson was right in pointing out that he had used the term Faradic and continuous current too indiscriminately.

V. *Dr T. R. Ronaldson* then read the following NOTE ON A CASE OF EARLY VIABILITY: — Having had an opportunity of accurately ascertaining the time of fruitful sexual intercourse resulting in the birth of a child, which has proved viable, between the sixth and seventh calendar months of utero-gestation, I think the case of sufficient importance to bring it before the notice of this Society, and to place it on record. Mrs C., æt. 21½ years, menstruated for the last time before becoming pregnant in the beginning of June 1880; she thinks the 3d or 4th. On the evening of the 25th of the same month, when she was expecting the return of her menstrual period—for she menstruated every three weeks—she had for the first time sexual intercourse with him who is now her husband. Coitus took place also on the two following evenings. Morning sickness began about the 11th of next month, *i.e.*, about 16 days after the first coitus. She cannot tell the time of quickening. Finding herself pregnant she and her husband, calculating from the 25th of June 1880 that her confinement would take place in the end of March 1881, arranged that their marriage should take place on the 13th of January 1881. Their scheme was, however, upset by the onset of labour on the evening of 2d January. The labour was natural, the second stage being an easy and comparatively short one, and was finished at 5 P.M. on 3d January. The child was healthy, plump, and vigorous, and cried lustily, but small, weighing 3¾ lbs., and measuring about 17 inches in length. The nails were short and rather soft. The eyelids could be opened. The left testicle had descended into the scrotum, the right had not. Taking it for granted that the child would not live, I did not make any more exact examination of it. At the same time, it appeared so vigorous and so well-developed that I had a faint hope that it might prove viable. It

is now more than five weeks old, weighs 4 lbs. 9 oz., and measures 18 inches in length. The right testicle, which had not left the abdomen at the time of birth, is in the spermatic cord. It has lost its plump appearance, but it is lively and has every appearance of surviving further. It was unable to suck the nipple for above a fortnight after birth, and was fed on cow's milk diluted with water. It is now, however, able to take the breast.

Remarks.—It is certain that Mrs C., then a domestic servant and unmarried, menstruated in her usual way in the beginning of June 1880. Apart from her own statement, a fellow-servant testifies that she did, as also does her aunt, who washed her clothes. From that time up to the 25th of the month there was absolutely no opportunity for sexual intercourse between her and her husband, while on the evenings of the 25th, 26th, and 27th of the month there were every facility and convenience. Nor was there an opportunity for intercourse with another. Immediately after her menstruation she left her situation and lived with her aunt, out of whose company she never was until the 25th. The transit from her situation to her aunt's house took place in the middle of the day, and from one part of the town to the other. Her statement as to the onset of morning sickness is corroborated by a fellow-servant. Both parents have been separately and repeatedly subjected to a tolerably severe cross-questioning by myself and by the woman's aunt—a most intelligent and observant woman—and their replies have been so consistent, frank, and straightforward that I have no doubt that their statements are reliable. Moreover, from the corroborative testimony of relatives and friends, from the circumstances in which the parents were placed at the time, and from the fact that they themselves, in arranging the time of their marriage, calculated from the 25th of June, I believe that the time which has been stated as that of fruitful coitus is correct, and that the child, on the day it was born, was, at the most, 192 days old from its conception, *i.e.*, 6 calendar months and 9 days. There is no doubt that when born it appeared more fully developed than is stated in text-books to be usual between the 6th and 7th months of utero gestation, and, in view of the apparent discrepancy between the period of utero-gestation and the development of the child, I would like to ask the opinion of members as to whether the 21 day type of menstruation in the mother may not account for the discrepancy. Coitus occurred immediately before, and the birth took place immediately after, what should have been a menstrual period, so that the mother missed ten menstrual periods. Is it not possible that, in women whose menstruation is of the 21 day type, the fœtus may develop more rapidly than in women who menstruate every 28 or 30 days?

Dr Bruce said it was evident Dr Ronaldson had taken great pains to ascertain the patient's exact history. He could refer to one case

in his own practice of viability at six months. The child survived for forty hours, and died evidently from loss of heat. Dr Sinclair had recorded a case where a child 2½ lbs. in weight and 13 in. long was viable at six months and lived for about half a year, when it weighed 6½ lbs. and was 17 in. in length.

Dr Rattray had a case where a lady, who came to Portobello for change of air, was delivered of a child (6½ months), which ultimately throve. He had also seen another case of a delicate asthmatic lady who was delivered of a child at the 7th month of pregnancy. It only survived five days, however.

Dr Wilson felt interested in Dr Ronaldson's record. He remembered a case where the child was born at the sixth month, weighed 2 lbs. 15 oz., and lived 3½ months.

VI. *Dr Ronaldson* then read the following NOTE ON A CASE OF CONGENITAL CLOSURE OF THE POSTERIOR NARES:—The case which I have now to bring before your notice seems to belong to a rare kind of congenital defect; but the defect is so important when it does happen that I think it well to call the attention of members of the Society to it. Mrs M. was delivered of her second child (a female), at the full time, on the night of the 2d inst. (2d February 1881). The labour was short and easy, the only peculiarity being that the liquor amnii was in excessive quantity. When the child was born I at once noticed that there was some peculiar obstruction to its breathing. On attempting to inspire, the lungs were not inflated, while the under lip and cheeks were sucked in. On slapping the buttocks to make the child cry, there was no difficulty to free respiration when the mouth was opened. On keeping the mouth open by a spoon and pulling the tongue a little forward, it breathed well and steadily, and cried lustily. There was therefore no obstruction to the respiration through the mouth and larynx. I accordingly proceeded to examine the nostrils, when I found that they were filled with a substance translucent in appearance and glue-like in consistence, and which, on being taken hold of, could be pulled out *en masse*, like a piece of tough glue. It was evidently a collection of inspissated mucus. After clearing the nose of this mucus, I attempted to blow air through the nares, but failed. Passing the forefinger of one hand to the back of the pharynx, with the pulp directed upwards, I next tried carefully and repeatedly to pass a probe, bent at the end, along the floor of either nostril and through the posterior nares so as to touch the finger in the pharynx. I failed to do this, and came to the conclusion that there was some organic obstruction of the posterior nares. As, on watching the child, I observed that whenever it reached a point of moderate asphyxia it opened its mouth to cry, and thereby had an opportunity of inflating its lungs through the open mouth, I thought I might with safety take the case to avizandum before attempting

to do anything for its relief. On returning next day I found, to my great disappointment, that the child had died an hour after my departure. I fortunately had an opportunity of making a post-mortem examination, which, though imperfect, was sufficient to show that the posterior nares were completely occluded by a firm membrane. The firmness of this occluding membrane was such that an ordinary surgical probe could hardly be forced through it without bending on itself; indeed, it did so bend on itself before perforation was accomplished. After the probe perforated the membrane it passed freely into the pharynx. I did not discover any other abnormality. The nose, anterior nares, cavities of the nostrils, the hard and soft palate, were normal. The child was plump and well developed generally.

Remarks.—I have been unable to discover in medical literature the record of any case similar to that which I have brought under your notice this evening. It shows that the nostrils are the proper channel through which respiration takes place, that breathing through the mouth is an unnatural accomplishment learned afterwards, and that the newly-born child perishes if by any chance the nostrils are obstructed before it has learned to breathe through the mouth. The mucus secreted in the nasal cavity during intra-uterine life probably finds its way through the posterior nares into the alimentary canal, as in this case it had collected in the nostrils and had become inspissated. Were I to meet with a similar case, I would attempt to force an opening sufficiently large to permit of comfortable breathing through the posterior nares, and I would pass bougies as required. Were that to fail, a gag retained between the jaws until the child learned to breathe through the mouth might be tried, but difficulty in the feeding of the infant would probably be experienced. The only other resource would be tracheotomy.

Dr Bruce remarked on the great rarity of the case. The practical point to note was, death apparently ensuing from complete interruption to the entrance of air by the nose, while, had the child only kept its mouth open, there was nothing to prevent it from obtaining an abundant supply. The case is important, as teaching us what we ought to do in similar circumstances.

Meeting VI.—February 23, 1881.

Dr Angus Macdonald, *President, in the Chair.*

I. *Dr James Young* showed a TWIN PLACENTA. The children were males, and presented head and breech. The first was a breech case, and weighed 6 lbs. He lived only twelve hours. The second child weighed only 4 lbs., and is thriving well.

II. *Dr Somerville* read his paper on

TWO CASES OF PUERPERAL HÆMATOCELE.

I MUST apologise to the Society for the reading of two such simple cases as I propose giving this evening, the nature of them being so easily understood and the treatment so obvious; but I have not observed that the subject of puerperal hæmatocele or thrombus has of late been before the Society, and as the affection is one that is not very common, it may be appropriate enough that it should for a short while occupy our attention.

CASE I.—Mrs M., a healthy young woman, was attended in her first confinement by Mr Woollerton, who was at that time assisting me. He saw her for the first time about midday on 31st October 1877, and found her labour progressing favourably. The labour continued natural in all respects, and about five o'clock in the afternoon she was delivered of a female child of average size. There was no instrumental interference, nor was any ergot administered. Half an hour after the birth of the child the mother complained of faintness, also of uneasiness about the rectum. The pulse was somewhat feeble, and the feet were cold; but there was no hæmorrhage issuing externally, and the uterus, felt through the abdominal wall, was properly contracted. So, after giving the necessary instructions, Mr Woollerton left the patient.

About an hour afterwards, in answer to an urgent message, I saw the woman. She was straining as if with labour pains in the second stage, and complaining of great suffering in the perinæum. Her pulse was good, the surface warm, and the uterus contracted. On examination I found the perinæum distended, and the anus also, just as if the fœtal head were about to be expelled from the maternal passage. The vagina was almost occluded; but when the finger was with difficulty introduced, the cause of all the symptoms was recognised to be a soft tumour located in the septum between the rectum and vagina, and decidedly to the left side. The discharge from the vagina was nothing more than normal. The patient was urged to desist from straining, and a morphia suppository was introduced into the rectum.

Late in the evening the patient was again seen. The pain had almost entirely subsided, yet the tumour was rather more tense. Pulse was good. Another morphia suppository was administered, and a pad of tow was applied to the perinæum.

Next day, 1st November, we found that the patient had passed a good night. There had been very little pain and no straining. The tumour was certainly not increased in size.

On 2d November the tumour was felt to be rather softer than before. The anal aperture was closed. Meanwhile the vaginal discharge continued natural; the general health kept quite satisfactory; the pulse was normal. The only thing complained of was discomfort in the perinæum.

From this time the patient continued well in all respects except that of the tumour. She suckled her child, and took her food well. The bowels were moved occasionally by castor oil. Now and then, when the uneasiness was great, a morphia suppository was administered. She was, of course, strictly confined to bed and to the horizontal posture.

On the 16th of November, that is, on the seventeenth day of the lying in, the tumour was carefully examined. It seemed to have diminished nothing whatever in size, being about the bulk of a man's fist; but the contents seemed to have gradually become more fluid. It was accordingly resolved to attempt its reduction with the aspirator, and the largest canula of Matthieu's instrument was dipped in carbolic oil and inserted into the swelling at its vaginal surface. It was not possible, however, to draw off more than two ounces of fluid, owing to the tube of the aspirator becoming constantly blocked up. What was drawn off was dark fluid blood. Though the quantity abstracted made no appreciable difference in the size of the tumour, it was thought advisable to desist from further interference, and to see whether spontaneous absorption might not now take place.

On the day after the use of the aspirator the pulse was quickened, and the temperature raised to 101°. Five grains of quinine were ordered every four hours.

Next day, 18th November, things were much worse; the temperature had increased to 104°, and the pulse was very rapid; the expression of the countenance rather anxious. There was, however, no abdominal tenderness or swelling. The tumour was incised by a bistoury introduced into the vagina, and an opening made sufficient to admit two fingers. This gave exit to a quantity of fluid blood, after which a large amount of soft clots was swept out by the fingers. The cavity was then washed out with a dilute solution of carbolic acid. On exploring the cavity it was found to be bounded on every side by a distinct wall; but high up, and rather to the left side, there was not much resistance to the examining finger, the feeling being as if the point of the finger came upon a button-hole. Some oiled lint was now stuffed into the incision. The internal administration of the quinine was ordered to be continued.

On 19th November there was great improvement. The pulse was quiet and the temperature greatly lowered. The cavity was again syringed with the carbolic lotion, which brought away a little dark bloody discharge. A drainage-tube of large diameter was introduced through the incision, and was retained.

For about a week from this time the cavity was syringed out twice daily, and the tube kept in the opening. The blood brought away by the syringing was never much, and in a few days it ceased to come. There was no perceptible suppuration. The contraction of the cavity proceeded rapidly, and it was nearly obliterated at the

end of the week. The patient made an uninterrupted recovery as far as the thrombus was concerned, though she suffered much from suppurating breasts. I may add that the patient has had two subsequent labours, both of which were easy and attended with no complications.

Case II.—Mrs J., aged 23, had always enjoyed good health. She had, however, been subject all her life to occasional hæmorrhages from the nose, for which no cause could be assigned. On the 18th December 1878 she was confined, at the full period, of her first-born child, a boy. For about a month during the latter part of her pregnancy she had suffered from pain in the left gluteal region, but this had disappeared a fortnight before her labour. The labour appeared normal in all respects, and lasted about seven hours. Though she did not complain of it at the time, she subsequently stated that for some time, about half an hour, before the child was born she had pain in the right labium. After her delivery she seemed well, and Mr Hendry, who attended her, left her as such. But almost immediately the pain in the labium began to increase, and in a short while a swelling could be felt in the painful part.

At 5 P.M., two hours after the termination of the labour, I saw the patient. She was extremely restless, and was evidently suffering most severely. The right labium was greatly swollen; it was nearly the size of the child's head, and very tense. The swelling extended up the vagina as far as the examining finger could reach, and it extended back to the anus. The woman was otherwise well, and her pulse was normal. A full dose of morphia was injected hypodermically over the gluteus maximus of the affected side. At 9 P.M. the patient was again seen. She had been quiet and comparatively comfortable ever since the injection of the morphia, but the swelling had rather increased, having extended backwards beyond the anus. There was a desire to pass water, but the pressure of the tumour on the urethra prevented this; so the catheter was used, and a large quantity of urine drawn off. A morphia suppository was introduced into the rectum, but was immediately extruded by the elasticity of the swelling.

On the 19th the patient was reported to have passed a quiet night. Though complaining of discomfort, she had no severe pain. The swelling was rather less tense than on the previous evening, but it seemed more diffuse. There was no fever. The catheter had to be passed both morning and evening. The lochial discharge was rather scanty.

On the 20th the general condition continued satisfactory, and the swelling was if anything less tense. The catheter, however, was still required. Lochia natural, but rather less than usual.

Next day, the 21st, the breasts gave evidence of a satisfactory secretion of milk. A dose of castor oil was given, and the bowels freely opened. The urine was now passed without the help of the catheter.

On the 23d the patient was making favourable progress. All uneasiness had disappeared. It was reported by the nurse that on the previous day—that is, on the fourth day of the confinement—the vaginal discharge had become very profuse. On examination it was found that the tumour had much lessened in size, and the finger introduced into the vagina discovered, about midway between the vulva and the upper end of the canal, a rent in its wall of about an inch and a half in extent, the cavity of the thrombus thereby communicating with the vaginal canal.

On the 24th and 25th favourable progress continued to be made, the swelling rapidly diminishing in size.

On the 26th there was slight feverishness, and the vaginal discharge was somewhat fœtid. The pulse was, however, only 84, and of good character; the temperature rather above 100°. Injections of tepid water with Condy's fluid were administered, and some small decomposing blood-clots were brought away. On the three subsequent days the notes made were as follows:—

Nov. 27th.—Discharge less profuse and less offensive. Pulse 96; temperature 101°.

Nov. 28th.—Discharge improving. Temperature 100·1°.

Nov. 29th.—Temperature 99·9°; pulse 84.

On the 30th of November—that is, on the twelfth day of the lying-in—the temperature was scarcely above 99°, and the pulse was 72; the lochial discharge being normal in all respects, the vaginal injections were discontinued.

From this time recovery was uninterrupted. An examination made soon after ascertained that the laceration in the vaginal wall was completely healed. This patient also passed through a subsequent labour without any untoward accident.

The two cases differ materially as to the situation of the hæmorrhagic effusion. In the second case it was situated in one of the labia, the most frequent position of the thrombus. In the first it was not in the labium, but it was in the septum between the vagina and rectum, and no doubt it was owing to its occupation of this site, and to its causing the very same pressure on the perinæum that the fœtal head had done a couple of hours before, that the great straining of the patient was due. I do not find this symptom of violent straining alluded to in the text-books; but in this case it was so severe that, had it not been checked, in all probability the hæmorrhage would have gone on till the integument gave way. But it is likely that the source of the bleeding was similar in the two cases. In the first case I had proof, in the exploration of the cavity, that the blood came from above, but this proof was wanting in the second, because, owing to the early period at which rupture took place, I feared to disturb the clots lest fresh bleeding should be induced. From the character of the hæmorrhage in such cases the blood evidently comes from a ruptured vein or veins, and it would seem most likely that the place of rupture is in the pampini-

form plexus of one side or other, this venous plexus being situated in the broad ligament, and formed by a junction of the ovarian and uterine veins. The veins in this situation are normally without valves, and so, even when quite healthy, must be more liable than veins elsewhere to overdistention. In my cases there was certainly no chronic disease of the veins; there was no appearance whatever of a varicose condition, and though one of the women had been liable to epistaxis, it had never been serious, and it is very doubtful whether there was any connexion between it and the hæmatocele. The mechanism of the production of the hæmorrhage would seem to be—*first*, that the pressure of the child exerted on the upper part of the vessels prevents the free return of the blood, and so causes them to become turgid; *secondly*, that, owing to the descent of the fœtus, pressure of a severe kind is also made on the distended part of the vessel or vessels, causing rupture; and, *thirdly*, that when this pressure is removed free hæmorrhage from the ruptured vein or veins occurs, and will go on until the tension of the effused blood equals that of the blood inside the vessel. Fortunately the pressure restraining the hæmorrhage is not usually taken off till the child is born, and the development of the hæmatocele is therefore delayed till after the labour is finished; but if, by cessation of the pains or long intermissions, the fœtus recede and pressure thereby be removed, then, of course, the bleeding will occur before the birth, and may become an obstruction to labour.

As to treatment. When the hæmatocele is developed after the termination of the labour, the first thing to be done is evidently to soothe pain by opiates. This enables the patient to keep from tossing about and straining, and so is favourable to the plugging up of the lacerated wound in the vessel. I never saw a more signal instance of the relief afforded by morphia than in those two cases. Then, where practicable, a pad of some soft material may be applied, that its support may do something to prevent rupture of the thrombus and the consequent danger of increased hæmorrhage.

After the tumour has ceased to enlarge, and when there is a likelihood of the injured vessels being sealed up, authorities differ as to what ought to be the treatment. Fordyce Barker advises early opening. Only one in ten cases, he says, get absorbed, and he advises early evacuation of the blood by an incision into the tumour. In my second case the matter was taken out of my hands by spontaneous rupture; but in the first case I think I did well to wait. The hæmatocele was causing no disturbance of the general health. Until it was interfered with there was no indication of its giving rise to anything more than local inconvenience; and it was quite evident that the further we got away from the day of the labour the further we were from the peculiar sensibility of a puerperal woman to septic influences. If, by earlier inter-

ference, the patient had got her temperature raised to 104° during the first two or three days of her confinement, she would probably have been in considerable danger. But, of course, if at any time fever should be set up by the effused blood, then the sooner a free incision is made and a clearing out of the sac is effected the better.

I shall say little of the treatment of those cases in which the hæmatocele is developed during the progress of the labour. I have only seen one such; she was the patient of a medical friend. We at once applied the forceps and delivered the woman. This seems to me the only rational treatment. By waiting you very likely find that the swelling becomes a serious obstruction to the passage of the child, and that in all probability the thrombus bursts and gives rise to frightful hæmorrhage.

I cannot help thinking that early application of the forceps in my two cases might have averted the formation of the hæmatocele. If each of the labours had been shortened by two hours, there might have been no rupture of bloodvessels. The more frequent use of midwifery forceps of late years is a great improvement. Severe and protracted labour must surely have injurious effects, although the wonder is that it has not more. We know, when we shorten a labour by the forceps, that we are saving our patient from some hours of suffering, but we do not always know from what evil results of that suffering we are also saving her. And this illustrates what I many years ago heard said by a friend, a former president of this Society, that a medical man often does more good to his patients than he himself is aware of.

Dr Bruce felt indebted to Dr Somerville for his interesting cases. He thought Dr Somerville deserved great credit for his diagnosis. He agreed with him in his treatment, and also in his remarks on the early use of the forceps in preventing much hæmorrhage.

Dr Hart had listened with great pleasure to Dr Somerville's paper. He did not understand how blood from the veins in the pampiniform plexus could find its way between the vaginal and rectal walls. It usually, in such a case, bled into the peritoneum.

The President had listened with interest to Dr Somerville's paper. The cases were uncommon, although, perhaps, they were more common than was recognised. They were difficult to differentiate from parametritis and perimetritis. Our knowledge of hæmatocele was only recent. It would certainly not have escaped recognition until Nelaton's time were it not for its being complicated with pelvic inflammation. He had only met with two extra-peritoneal and one retro-uterine intra-peritoneal puerperal hæmatocele. He mistook the last for an abscess, and aspirated. He saw one extra-peritoneal at the Maternity. A week or two after delivery he could not understand how the pulse and temperature rose. On vaginal examination, a bulging, soft mass was felt on the left side of

the vagina, which was opened and washed out. The patient recovered completely. Of course such treatment was only advisable when the effusion was extra-peritoneal.

Dr Somerville thanked the Society for their reception of his paper. The diagnosis was easy on local examination. He had no doubt the hæmorrhage was extra-peritoneal.

III. *Dr R. Bell* then read his paper on

AN IMPROVED METHOD OF TREATING UTERINE DISPLACEMENTS.

I TRUST the members of this Society will not deem it presumption on my part in having designated my plan of treating uterine displacements as an *improved* method. Perhaps it would have been more modest if I had called it a *new* method of treating such malpositions. I, of course, was viewing the subject from my own standpoint; and as experience has taught me that patients do better with *me* under this than under the *old* mode of treatment by pessaries, perhaps you, gentlemen, will excuse me if I have prematurely used the adjective which is at the heading of this paper. I feel assured that if you obtain the same good results that I have done, you will in future adopt it, and by so doing will tacitly acknowledge it to be an improvement. It may be, I admit, that I have not employed the ordinary treatment by pessaries correctly, and thus my want of success. But if this has occurred in my practice, I have the consolation of knowing that it has occurred in the practice of others also; moreover, that after failure in giving relief has happened in the hands of my friends, where pessaries have been employed, my plan has eventually succeeded.

It will be my aim, in this communication, to limit my observations as strictly as possible to practical details anent this method of treating displacements of the womb. It will therefore be quite unnecessary for me to occupy your time by any prefatory remarks regarding the anatomy of the organ itself and its relations to the surrounding viscera. Suffice it to say that the normal relations of the uterus to the neighbouring parts are often departed from, and it is rarely that this departure can occur without entailing not only local pain and intense discomfort, but also, through the nervous apparatus, serious physical and mental suffering. Any plan which experience can demonstrate to be of service in such straits is therefore not only worthy of serious consideration, but it is also our duty to test it and ascertain whether it really, in other hands, will give the same good results as its exponent claims for it. The peculiar posing of the uterus in the body, the elasticity, or rather yielding nature of its supports, and its dependence upon the health of the neighbouring viscera for this support being uniformly main-

tained, renders it peculiarly liable to displacement. Anything which interferes with the circulation in the pelvis will naturally interfere with the health of the womb, and will thus render it more susceptible of disease, and in this way will predispose to malposition. If constipation exists, then the weight of the fæces in the sigmoid flexure and the higher reaches of the colon will not only interfere with the free circulation in the pelvis, but will also, by mechanical pressure on the organ, crowd it out of position. Then, again, if we have an irritable bladder, and in consequence of this the viscus is unable to retain more than a few drams of urine at a time, the constant desire to make water, and the straining which frequently accompanies each act of micturition, will, as a result, force the uterus forwards. Another pregnant cause of displacement, acting this time from above, is dyspepsia, which, causing distention of the intestinal canal, brings undue pressure to bear from above upon the fundus. One more powerful factor in inducing these dislocations has recently been pointed out, viz., the endeavour to obtain greater compass and volume in singing by powerful action of the abdominal muscles, and so forcing downwards all the viscera. It is therefore obvious that any causes such as those enumerated must of necessity be removed before local remedies can have the desired effect. It will also be necessary to attend to the health of the canal of the neck and body of the organ at the same time that the displacement is being tackled, or we will be most certainly disappointed in our ultimate results.

It would be quite foreign to the object of this paper were I to enter upon the symptomatology of uterine displacements. These are so well known to every member of this Society, that I will now only speak of a remedy which, while it acts as a support to the organ, also does duty as a medicinal agent, and stimulates to a more healthy action the surrounding parts. I may be permitted to remark that I have had this remedy as it now stands in use for about two years, and during this period have treated over 200 cases by means of it alone. In fact, I have not used a pessary during the past eighteen months. Amongst the cases so treated every form, and I think I may add every gradation, of displacement has come under my observation, and I can confidently assert that in every instance great relief was obtained, and in the majority of cases a complete cure was and is the result. There is certainly this disadvantage in it—the patient requires to be under careful and patient observation for weeks together, and in many instances for months at a time; but surely these are trifling objections when we know a woman's health and her husband's and family's happiness are in the balance. Before being led to employ the present application I had used more or less, for years previously, the ordinary glycerine of tannin of the pharmacopœia; but though I found it a most efficacious astringent, and that it answered the purpose I had in view most admirably, yet its expense was a decided barrier to

its universal employment, and, moreover, it had the disadvantage of staining the underclothing so much that this of itself told very much against it ever being adopted as a popular remedy. I therefore had recourse to the following solution:—Glycerine, 80 oz.; alum, 10 oz.; carbolic acid, 1¼ oz. It is well known to gynæcologists that glycerine applied on cotton tampons has a most beneficial effect in stimulating the capillary circulation of the uterus and pelvis; moreover, that it acts as a depleting agent, insomuch that it drains the blood of a certain portion of its watery constituents by virtue of its great affinity for water. In short, if there is hypertrophy of the organ or of the cervix alone, we have in glycerine tampons a great aid to the treatment of such cases. It is a matter of observation that if a displacement continues for any length of time, hypertrophy of some portion or of the whole organ is the result. We have thus a greater strain thrown upon the uterine supports, so that what at one time was a result becomes a factor in aggravating the disease. Our first duty, then, is to endeavour to reduce the overgrowth, and at the same time prevent its recurrence by rectifying the position of the organ and retaining it *in situ*. It must also be observed that when we have a hypertrophied condition of the walls of the uterus, in the majority of instances there is softening of the texture, so that a flabby condition results. In these cases it is a matter of little difficulty to restore the position of the organ, but as soon as the support is removed it falls back into its abnormal position. Moreover, if there exists (which frequently does) any amount of inflammatory action, the presence of a pessary is a most serious source of danger; and besides, supposing there is no risk of an attack of acute metritis, there yet remains the disadvantage that the relief is entirely due to the fact of a mechanical support being retained in the vagina, and which every little while requires to be removed to make way for one of larger size, till in the course of a short time the walls of the vagina become as capacious as the pelvis will admit of; moreover, the woman always retains the disagreeable consciousness that she is wearing an instrument, and, let me add, there is ever present the danger of the hard pessary injuring the soft parts upon which it is constantly resting. It is well known that for a pessary to be of service, and to be clad with the minimum risk of danger, it must fit accurately, and it is only long experience and patient care that will ensure this result. If it does not apply itself with precision to the parts it is worse than useless, and may—nay, certainly will—result in serious mischief. One advantage of my treatment, and no mean one, is, that it is rarely necessary to employ either the probe or elevator when there is a flexion. This is another prolific source of danger removed.

Let us first consider *prolapse* of the uterus. This, as we all know, may vary from a slight lowering of the position of the womb to complete procidentia. It is due either to (1) an increase in weight

of the organ; (2) to faulty action of the supports; (3) it may arise from pressure from above, as has been before pointed out, or from all these factors combined.

If there is a lacerated perinæum, this must of course be rectified before any treatment can be followed by beneficial results. From whatever cause prolapse occurs, there is always, as a result, hypertrophy of the organ and relaxation of the vaginal walls and uterine ligaments. If the uterus, then, is elevated to its normal position, and retained there by a suitable appliance, the hypertrophy will disappear; and if at the same time we can stimulate the capillary circulation of the parts, and also cause a steady drain to take place of the watery constituents of the blood in the uterus and its neighbourhood, we will do much to remove the tendency to the displacement by reducing the size of the organ and simultaneously strengthening its supports. This end is attained most satisfactorily by replacing the prolapsed uterus in its normal position, and retaining it there by a tampon of cotton saturated with the glycerine of alum and carbolic acid, and allowing this to remain in the vagina for from three to four days. The presence of this tampon excites an abundant watery discharge from the vagina, necessitating the patient constantly to wear a napkin. Glycerine, as has just been observed, excites this discharge, but when combined with an astringent, the effect is an even more profuse drainage of the watery components of the blood; moreover, the effect on the capillary circulation is also intensified, and the astringent effect on the vaginal walls is most beneficial. By this means alone I have had the satisfaction of seeing patients completely cured of procidentia which has existed from three to eight years, after the above treatment has been persevered in for a period varying from two to seven months, and in a few cases where the disease has existed for a much greater length of time very great relief has been experienced after a more protracted course of treatment. If the tampon is merely saturated with glycerine it becomes very offensive after a few hours, and if with glycerine and alum alone, although it does not become fœtid so soon, yet it will do so much too rapidly to enable us to get the full beneficial effect. When, however, the carbolic acid is added, it will be found that there is no fœtor at the end of four days, when the tampon may be removed, to be replaced by another. By this means we can keep the organ *in situ* for weeks and months together, and likewise act on it and the neighbouring tissues with such an advantageous result as to restore them to a healthy condition, while we also have the satisfaction of seeing the woman's general condition indicating a marked improvement, which certainly very much increases the probability of the benefit derived from the local treatment being permanent. I claim for this method of treatment equal advantages with any plastic operation that may be performed upon the vaginal walls; and there is this to boot, that the uterus itself also probably

partakes of benefits which an operation on the vaginal walls cannot confer.

Let me now turn to the treatment of versions and flexions of the uterus; and perhaps I may be permitted to remark, without the slightest wish on my part to exhibit a spirit of boasting, that I have treated quite a number of cases which before coming to me had been subjected to the general routine of pessaries and stems without deriving any benefit whatever, and which have, after a few applications of the tampon, expressed themselves as feeling great relief. It may perhaps be interesting to give details of one case. This lady had been suffering from retroflexion of the uterus for six years, which certainly was aggravated very much by obstinate constipation, but this symptom had been quite overlooked. When I saw her first she was a most miserable-looking object, with an ashy complexion, which, however, was partly attributable to the absorption of fœtid matter from fæcal accumulations in the rectum and colon, as when these masses were removed and kept from accumulating, her complexion improved, and she felt somewhat relieved in every way. Yet the least exertion completely prostrated her, and the dysmenorrhœa was most intense. For six years she had been under treatment by means of pessaries and stems of all descriptions, from solid silver stems down to pessaries made of gutta-percha covering copper wire, and with no benefit; in fact, she was daily getting worse, and had lost all heart. In this case I used *two* tampons saturated with the solution, one much smaller than the other, so that it would occupy a position supporting the fundus, well up in the vaginal roof, while the other and larger tampon was also placed behind the cervix, and acted as a support to the smaller of the two. After three months of this treatment she was so far restored to health as to be able to endure a considerable amount of fatigue, and eat and digest satisfactorily, and sleep well, feats she could not perform before; and at this moment I know she enjoys life thoroughly.

I think it often a good plan to employ two tampons in retroflexion and also in anteflexion, but, as a rule, one answers all the purpose.

It is gratifying to observe the speedy effect of this treatment on the bladder symptoms in anteversion and anteflexion. I think I need hardly enter into any further details as to the method of treating the other varieties of displacements, as it will be obvious to all how each variety may be individually relieved. It may be urged against this method that it is necessarily very tedious in the carrying of it out. Certainly it is; but then any medical man with an average amount of intelligence can, under proper directions, manage an ordinary case of displacement requiring treatment. There is no danger to apprehend from a badly-fitting pessary with its horrible train of symptoms, and there will be more complete relief speedily attained than any pessary can give.

Dr Hart said the use of the glycerine plug was first introduced by Dr Marion Sims of New York. It was now a very well known method of treatment in suitable cases. Thus, in congested ovaries, split cervix, and retroversions of the uterus, when the fundus was tender, it acted admirably by depleting and supporting the prolapsed or displaced organs just as a pessary does. Every Edinburgh student knew this. But in retroversion of the uterus where the tenderness had been subdued it of course gave way to the Albert Smith pessary. When properly fitted, this instrument could be left in for a month or two without being changed. Very often pregnancy occurred while it was being worn, and then, of course, a perfect cure was ultimately got. A glycerine plug had not the slightest effect in remedying the flexion of an anteflexed uterus, as Dr Bell asserted. It tilted the uterus as a whole back, but the relation of the fundus to the cervix was unaltered by it. The glycerine plug was exceedingly useful in the subacute inflammations almost always complicating displacement, but then gave way to vulcanite pessaries.

Dr James Young thought the addition of tannin as an astringent to the glycerine a good idea. He had long used the glycerine plug with advantage in cases of congestion of the ovaries or uterus, as well as in numerous cases of different flexions of that organ, and found it to act favourably by depletion, and prepare the uterus for the use of the Hodge pessary, if the case demanded such treatment.

Dr Bruce thought Dr R. Bell's remarks as to the evil effects of pessaries applied only to badly-fitting ones. When properly fitted they were of the greatest value.

The President was very glad to see Dr Bell present in the Society to-night, as it argued considerable interest in its work that he should have come so far to read a paper before it. He had also listened to the paper with much interest. But in saying so he must be held as distinctly guarding himself against being held as agreeing with a great part of what Dr Bell had advanced in his paper. Dr Bell had disclaimed, as well he might, all credit for originality so far as the use of plugs of cotton wool steeped in glycerine for the subjugation of pelvic congestion and inflammation was concerned. He was also afraid that further experience would show that Dr Bell had overrated the advantages to be gained from the treatment proposed, as well as the range of the cases to which it was applicable. At the same time, the combination of alum and carbolic acid with the glycerine, which was the most original part of the paper, was suggestive, and was certainly worth trial, though he would hardly expect to obtain such satisfactory results from it as Dr Bell had obtained. Very nearly the same combination was suggested by Atthill when he recommended the use of plugs of cotton wool applied to the cervix after they had been dipped in colloid styptic to which $\frac{1}{10}$ of its bulk of carbolic

acid was added. Here you have the styptic effect of the tannin and the collodion with the antiseptic effect of the carbolic acid. Dr Bell had improved upon this idea by adding the glycerine. He could not understand how the proposed treatment could affect displacements in the manner asserted by Dr Bell. He rather thought Dr Bell's observations must chiefly refer to downward displacements, where the astringent effect of the alum was well known as giving relief by its action upon the vagina. He was not surprised though Dr Bell met with great success in his treatment of anteversion. He saw very few of these in practice, and believed far too much was made of them; indeed, he regarded an anteverted uterus which was replaceable as practically normal. But he must object to the statement made by Dr Bell that his astringent plugs, even when, as he said, aided by ergotin, caused absorption of a small fibroid in the anterior wall of the uterus. We possess no evidence that any appliance hitherto made can cause the absorption of such tumours. Careful observation of tumours treated by ergotin, such as those of Leopold, show that they are squeezed and starved by the prolonged use of ergotin, but not absorbed. He must also demur to Dr Bell's statements regarding the use of pessaries when he stated that they required to be constantly increased in size. That might be true if a pessary alone and unaided by operative or external support were employed to combat a prolapsus uteri; but for the treatment of retroversions it was well known that we were able to employ pessaries gradually decreasing in size. Besides, a well-fitting and well-adapted vaginal pessary did not, as Dr Bell stated, ever distend the passage until it was as large as the pelvic cavity.

Dr Bell replied. He had found his method of treatment very valuable.

MEETING VII.—MARCH 9, 1881.

DR ANGUS MACDONALD, *President, in the Chair.*

I. *Dr Halliday Croom* showed the UTERUS AND ANNEXA of a patient who had died suddenly two hours after labour. There were one or two points to which he wished to draw attention. The ovarian vein on one side was very much distended, and on vertical mesial section the close coaptation of the uterine walls, and, what would be interesting to Dr Hart, the much greater thickness of the anterior uterine wall as compared with the posterior, could be noted. The bladder was small, and the posterior vaginal wall exceedingly thin at its upper part. This was a fact interesting in connexion with the application of the forceps.

II. *Dr Macdonald* exhibited—(1.) an EPITHELIOMATOUS TUMOUR which he had lately removed from the urethra and vulva of a

patient in the Royal Infirmary. The patient was 40 years of age, and only lately married. The epithelioma involved the outer extremity of the urethra, and part of both labia minora as well as of the clitoris; but on careful examination it was made out that the disease had not reached the pubic bones. The symptoms complained of were pain and complete retention of urine, the patient being relieved only by catheter. The indications for relief were so urgent that, in spite of the possibility of landing the patient in incontinence, it was resolved to remove the tumour. Four needles were made to transfix its mass from before backwards, and the whole of its bulk was surrounded and removed by the galvano-caustic wire. About half an inch of the lower end of the urethra was removed. There was no bleeding. The urethra was sought for, and found with difficulty, and a winged catheter was passed into the bladder, and the urine drawn off, as it formed, with a long guttapercha tube. The catheter caused no irritation, though it was left for about two months in the bladder. The patient completely recovered, and was able to retain and pass her water herself before she left the hospital. (2.) A TWIN PLACENTA with a COMMON AMNION. Hyrtls' law held good, viz., the children were both of the same sex; but as one had died, he was unable to say whether they would have been similar in other points.

III. *Professor Simpson* then communicated, for Dr Sang, Broughty Ferry, a paper on

FIBROID TUMOUR OF THE UTERUS COMPLICATING LABOUR.

CASES of tumour of the uterus complicating labour are happily not often met with in the routine of practice. After ten years' experience, this is the first time I have met with such a complication and had to deal with it. Having examined the few works at my command and been unable to find any statistics regarding the relative frequency of such cases, I conclude that they are not very often encountered, and that their relative frequency cannot be great. Any notice at all on this point which I could find referred to cases in which, by the practice of a little dexterity, the mass had been pushed out of the way, or cases in which craniotomy had had to be resorted to, and been performed with more or less difficulty. On this account I have taken the liberty of bringing before you the following notes of a case which I had to deal with the other day, and which presented some points of interest, and may deserve a little consideration from others as well as myself:—

On the evening of Saturday, 22d January 1881, I was summoned to attend Mrs B. in her sixth confinement. She had taken ill in the morning, and had been suffering from labour pains during the greater part of the day.

Previous History.—She is a healthy woman, of average height

and build, about 39 years of age, and has been eight years married. Her first child was born in England; the labour was tedious, and had to be finished with forceps. Her second and third confinements took place in Dundee, and she states that they were both easy and normal. I attended her in her fourth in July 1877, and also in her fifth on 19th August 1879. Both labours were rapid and easy, the latter especially so. No trace of tumour was noticed then; but, no symptom of such a complication being present, the uterus was not so carefully explored as to lead me to say positively that it had not then originated. She has never had a miscarriage, hæmorrhage, or any serious illness, and both her parents are alive and in good health. During the present pregnancy she has been fairly well, but, if anything, felt weaker than usual, especially in the lower part of the back opposite the lower lumbar vertebræ. The fœtal heart was heard. The abdomen was large, and the head seemed to be presenting.

7 *o'clock* P.M.—*Examination per Vaginam.*—The passages were moist and well lubricated with tenacious mucus; the membranes were ruptured, and the os and cervix uteri were flaccid and well dilated. At the brim, on the posterior wall of the uterus, and about an inch above its posterior lip, was felt a large, fleshy, fibroid mass. It seemed, as far as I could judge, to be from 1½ to 2 inches in thickness, occupied the conjugate diameter of the brim, and extended more to the right sacro-iliac space than to the left. Anteriorly the fœtal head was felt entering the brim, and with some little difficulty could be recognised occupying the first position, viz.,

occiput to the left and anteriorly, *or rather between that and the transverse diameter.* Indeed, so peculiar did the whole thing feel that the cleft between the tumour and the head made me think that

I had a breech presentation to deal with, it felt so like it; but after feeling carefully all round and coming upon the *anterior fontanelle*, the true nature of the case became manifest.

This sketch will help to illustrate the case as far as the position of the tumour is concerned. It is an imaginary section through the brim of the pelvis perpendicularly and in the conjugate diameter, which is represented by the line A B. The tumour is darkened, and SS is the line of the sagittal suture.

The patient complained of pain during the examination, and more especially when the swelling was touched. She said it was more tender than any other part. I made up my mind to remain with her for a few hours and see how she would get on. During the greater part of that time she remained in bed in the knee-elbow position, and when asked why, answered "that she thought she was easiest in that way." She also complained of slight dysuria.

One attempt was made to push back the tumour in this position, but it was too firmly fixed. The pains were numerous, but very weak and irregular.

11 *o'clock* P.M.—Another examination was made per vaginam, *i.e.*, four hours after the first. There was no change in the condition of things; the head had made no progress in descent, but seemed to remain fixed. I made up my mind now to finish the labour, and in the first place to give the forceps a fair trial. The patient was therefore put completely under the influence of chloroform, and a catheter passed to make sure that the bladder was empty. The rectum was empty. Other minor points preparatory to using the instrument were attended to. The state of matters at the brim were again carefully explored while the patient was under the influence of the anæsthetic, to make sure that as correct an appreciation of the case as possible had been obtained.

The lower blade of Simpson's double-curved forceps (the instrument which I have been in the habit of using) was now introduced, and slipped into its position quite easily. The upper blade was then lifted up and introduced. Some difficulty was experienced in getting it into position opposite its fellow, and to lock easily. As an accurate and easy lock was of great importance in a case like this, a little time was taken up in securing it.

Everything being now ready, steady traction efforts were made as near as possible in the line of the pelvic axis, at short intervals, commencing very gradually, and increasing the strength of each pull as time went on. The head seemed to make little or no progress for a considerable time; and as some efforts at traction more decided than I had been using threatened to bring the mother's body along with them, I found it necessary to plant my right foot on the patient's left hip in order to fix the pelvis. This had the desired effect. The process of extraction occupied an hour and fifteen minutes; indeed I was almost beginning to despair, when the head cleared the obstruction and descended into the pelvis. One

slight pull more brought it beyond the external parts. The instrument was now removed. During the whole time it had been used purely as a tractor, no oscillatory or pendulum-like movement being resorted to, and no compression was made upon the fœtal head through the handles. At this stage a medical friend arrived. My arms being tired, he kindly finished the case. The head remained about fifteen minutes apparently fixed before the movement of external rotation took place, after which the body was quickly expelled. The secundines came away quite easily, the uterus contracted firmly, and there was not more than the usual amount of hæmorrhage. On examining the uterus the tumour seemed to occupy a large portion of its posterior wall. It was smooth, of an ovoid form, slightly flattened antero-posteriorly; marked on its anterior surface with a depression or grooved hollow, not deep, but distinct; had a hard, fibrous feeling, and was apparently submucous. Its longitudinal diameter would measure about 3 inches, and its transverse rather over 2. I did not care for fingering it more at the time. The binder was applied, and an opiate left with the friends, to be given during the night.

The umbilical cord pulsated when the child was born; but though efforts for its resuscitation were tried, they were of no avail. The child was large and well formed, above the average weight, I should say, from its appearance; the head was also large, and had been grasped by the forceps in the oblique diameter, the mark of the upper blade being over the right temple. The face, especially towards the left side and temple, was much blackened and ecchymosed. I regret now that measurements of the head had not been taken then; on the following day it was too late.

Sunday, 23*d*, *forenoon*.—Patient passed a fair night, but was much pained. Pulse 120, weak; temp. 101°. Has not yet passed urine. Lochial discharge normal. To have milk diet, potass water, and an opiate at bedtime.

Monday, 24*th*.—Passed a good night; not so much pained. Pulse, 100; temp. 99°·5. Feels quite comfortable, but weak. Has passed urine several times.

Wednesday, 26*th*.—Condition same as on 24th. To have oil tomorrow morning.

Friday, 28*th*.—Medicine acted freely yesterday; feels weak in consequence.

Sunday, 30*th*.—Improving. Pulse 96, still weak and compressible; temp. 99°. Not much discharge on digital examination. Os uteri contracting. The lower border of the tumour could be felt. The fundus uteri was about three inches above the pubes.

Tuesday, 1*st February*.—In every way improving. Pulse 92; temp. normal.

Saturday, 5*th February*.—Doing well. Uterus felt above the brim, and the right side with more difficulty than it was a week ago. The fundus is still about 2 inches above the pubes.

Saturday, 12*th February*.—Patient is out of bed and moving about the house, so examination not made.

Saturday, 19*th February*.—Exactly four weeks since confinement. The fundus uteri is just about the level of the pubes. On internal examination the os is contracted, and merely admits the tip of the finger, the tumour being touched with difficulty. The sound passes on each side of the mass into the uterine cavity, which measures not more than 3 inches. The point of the instrument moved freely in the fundus of the cavity. The tumour is evidently much smaller than it was when labour took place a month ago. I think the diminution seems to be more marked transversely than vertically. The patient has had no specific treatment.

Remarks.—I have described the case minutely, even at the risk of being tedious. It is a rule preparatory to using the forceps "to be assured of their necessity." It might almost be said with equal force that no one having used them, especially in a troublesome case, should lay them aside lightly and without reflecting carefully on the condition of things that had to be contended with, whether the principles which guided him bore the test of scrutiny, and, all things considered, was the treatment adopted the best one in the circumstances for the patient. Before such a question can be answered, a minute knowledge of the facts is necessary.

In this case there were two factors retarding labour:—

1st, A tumour obstructing the maternal passages.

2d, Partial inertia of the uterus due to its presence.

The first consideration, then, is, having waited four hours, whether wait longer in the circumstances or finish the labour? I think the balance of evidence was in favour of the latter course (the one adopted). Suppose interference had been withheld till morning, the probability was that the same amount of interference would have been necessary in the end, and would have to be carried out on a patient so much the more exhausted by the delay.

Having decided to finish the labour, how was it to be done—by means of forceps or turning? Authorities[1] are agreed that $3\frac{1}{4}$ inches is the narrowest conjugate in which we can expect to use the forceps successfully, and the same authorities agree in considering 3 inches as the minimum in which turning should be attempted. The conjugate, so far as could be judged, was too narrow for the forceps; but then the narrowing was caused by a fleshy body movable within certain limits, consequently it might be enlarged by the compressibility of the body. Against turning there were two considerations:—

1st, The membranes had ruptured early, and the liquor amnii had escaped more than four hours previously.

2d, The walls of the uterus were adapted pretty closely to the body of the fœtus.

[1] Leishman's *System of Midwifery*, page 629. Barnes's *Obstetric Operations*, page 72, 2d edition.

Taking these things into account, I resolved to try the forceps. If they took a firm hold and locked easily, the indications were in favour of success. If I had failed in getting a good easy lock, then I would have attempted to turn. Again, turning in a case like the present must be fatal to the child; the forceps not necessarily so.[1]

Regarding the mechanism of labour in this case, I think it must be considered as much the same as the mechanism of a case with a contracted conjugate diameter at the brim.

In a contracted conjugate diameter the first step, according to Dr Matthews Duncan,[2] is lateral flexion of the fœtal head, by which the sagittal suture approaches towards the sacral promontory (and the greater the contraction of the conjugate the more marked is the flexion), to which the side of the head adapts itself, and from this point as a pivot lateral flexion in the opposite direction, and rotation of the occiput on the pubes, take place, until it, the occiput, is brought down under the symphysis, with the long diameter of the head in the plane of the conjugate. The occiput now becomes fixed, and the forehead rolls off into the cavity of the pelvis.

What the first part of the act in this case consisted of I am not in a position to say, but the result of it was that the left side of the child's head became adapted to the tumour immediately above its most prominent part, and with the sagittal suture about where I have shown it; and from this as a pivot the occiput made its descent by a rotation movement to a point behind the symphysis, when it in turn became fixed and acted as the centre of motion to slip the forehead off the tumour.

I think the position of the sagittal suture at the commencement, the descent of the occiput which was observed, the jerking of the head off the obstructing mass, the ecchymosed condition of the left side of the child's head and face, and the depression and groove in the tumour, all tend to point to what I have described as the probable mechanism in this case.

[1] *Lectures on Obstetric Operations*, Barnes, 2d edition, page 75. In answer to the question, What is the extreme degree of narrowing that will admit the useful application of the forceps?—"I have stated it in the table at 3¼ inches, but it cannot be defined absolutely. A head slightly below the normal size, and less firmly ossified than usual, may be brought through a conjugate diameter of only 3 inches. And as we cannot know with precision what the properties of the head still above the brim are, we are justified in making tentative experimental efforts with the forceps before resorting to turning, which is perhaps more hazardous to the child, or to craniotomy, which is destructive to it. This uncertainty or want of fixity in the relations between the head and the pelvis compels us to leave a range or borderland of debatable territory between the more clearly recognised or conventional limits assigned to the several operations."

[2] *Obstetric Transactions London Society*, vol. xx.

Dr Halliday Croom thought the case that had been brought under the notice of their Society one of the best told he had ever listened to. There were some interesting points in it to which he wished to allude. Thus it was unusual to meet with a tumour of such size in a woman who had so many previous pregnancies, and who had had no previous complication, hæmorrhages, nor abortions. The treatment was good, and the selection of forceps fit and proper. In such cases one should remove the tumour if possible, and if not, attack the fœtus. He thought it very remarkable that there were no complications in the third stage, such as hæmorrhage, nor any interference with involution during the puerperium. It was certainly unusual for such a large tumour to have occasioned no complications either during pregnancy or the lying-in.

Dr Simpson thought the profession and the Society indebted to Dr Sang for an important contribution to what the Germans termed "Casuistik." The first question to consider was that of diagnosis. Was this really a fibroid tumour? Now, although the history and tenderness were against its being of a fibromatous nature, he had yet no doubt but that it was so. The tenderness may have been due to pressure, and its exact position, viz., in the upper part of the cervix, rendered it no barrier to conception, and prevented any complication in the third stage. In enumerating the conditions leading him to decide on early interference, Dr Sang had kept the maternal condition in view; but the child had also a better chance of survival. He agreed with Dr Croom that the use of the forceps was right. The record of the mechanism, and the history of the involution of the uterus, were very valuable, and would enrich our Transactions.

Dr Hart thought the case interesting, but did not believe the mechanism of delivery was that of a flat pelvis. It had the movements one found at a justo-minor brim.

Dr Carmichael agreed with Dr Sang that forceps was the proper treatment, but demurred to his opinion that the child would have been dead if turned.

The President had little to add to what had been said. He was greatly pleased with the paper and the discussion on it. No doubt some points were obscure, but he agreed with Drs Croom and Simpson as to the nature of the tumour. It could not have been sarcomatous, was not inflammatory, and could really be nothing else but a fibroid. The difficulty of its causing no trouble in previous labours could be got over by supposing it was of recent growth. As to the question of turning and forceps, that was to be settled by the gentleman in charge of the case. Of course, if Dr Sang could have turned and brought down the occiput to the left, he might have had an easier delivery. The only question with him was, whether in such cases one was justified in using so much traction with the forceps. It was probably better for the mother to do craniotomy than to risk her life only to bring a still-born child

into the world. His personal experience of such cases was not great. He might mention an interesting subperitoneal one. It was pediculated, and, getting impacted between the abdominal wall and pregnant uterus, set up general peritonitis. By the use of morphia, however, it ceased to give trouble, although at one time it was thought possible that it might require removal by gastrotomy.

Dr James Young remembered a case of a patient in labour where there was a fibroid on the posterior wall of the uterus. Sir James Simpson also saw the case. Forceps were applied, and the woman and child recovered.

Dr Sang thanked the Fellows for the reception accorded to his paper. It was only after the involution of the uterus had been watched, at Dr Simpson's suggestion, that this view was adopted of its being a "fibroid."

IV. *Dr Simpson* then read his

QUARTERLY REPORT OF THE ROYAL MATERNITY AND SIMPSON MEMORIAL HOSPITAL.

During the three months ending 31st January 1881 the duties of house surgeons were fulfilled by Mr R. Cathcart Bruce, M.B., C.M., and Mr Potts, M.B., C.M., who have drawn up for me the following record:—

There were 48 intern and 113 extern cases. The intern cases are reviewed under the three following heads: I. Pregnancy; II. Parturition; III. Puerperium.

I. *Pregnancy.*

Of the 48 cases, 26 were primiparæ and 22 multiparæ, as follows: ii. paræ, 11; iii. paræ, 4; iv. paræ, 4; vi. paræ, 2; viii. paræ, 1. The value of abdominal palpation and auscultation in obtaining accurate information as regards the presentation and position of the fœtus was shown in 39 intern cases thus examined before labour was far advanced, and in some cases many days before the commencement of labour. In *all* of these the diagnosis of *presentation* was confirmed by the subsequent labour, and in 34 the *position* also, the remaining 5 cases being noted as doubtful (before the advent of labour) owing to the free mobility of the fœtus to right and left of the middle line on palpation.

There were 3 cases in which the position of the fœtus in utero altered during the short period they were under observation.

In one case, a pelvic presentation having been diagnosed, was changed to that of a head by external manipulation. The version was favoured by a lax condition of the abdominal and uterine walls and the presence of a considerable quantity of liquor amnii in a multiparous female.

II. *Parturition.*

There were 48 children born, of whom 28 were males and 20 females. Of these 44 were born alive, the remaining 4 being still-born, and bearing evidence of being dead in utero some days. The classification of the labours was: (*a.*) Natural, 39; (*b.*) Laborious, 3; (*c.*) Preternatural, 4; (*d.*) Complex, 1.

(*a.*) Of the natural labours, the position of the vertex was—in 21 cases L.O.A., in 15 R.O.P., in 2 L.O.P.

(*b.*) Of the laborious cases, the position was—in 2 cases L.O.A., in 1 case L.O.P. The forceps[1] were applied on three occasions on account of delay in second stage from deficient uterine action. The children were alive, and the mothers made good recoveries.

(*c.*) Of the preternatural labours, 3 were pelvic, L.S.A. presentations, and 1 footling. One street birth occurred, in which the position of the vertex was diagnosed to have been R.O.P. from the position of the caput succedaneum, which was slight but distinct over the superior angle of the left parietal bone.

(*d.*) The complex labour was due to retention of the placenta.

Mortality. — 1*st*, The *maternal* mortality was 3 — 2 in the house, and 1 two days after removal to the Royal Infirmary. The causes of death were: 1. Septicæmia and crural phlebitis; 2. Gonorrhœal endometritis, salpingitis, and peritonitis; 3. Acute peritonitis and pneumonia. 2*d*, The *fœtal* mortality was 4. These fœtuses were putrid, and had been dead before labour set in. In three of the cases syphilitic disease of the placenta had caused the death, and in the fourth the death was traced to a fall a fortnight before labour. 3*d*, The *infantile* mortality was 2—one from defective vitality in a somewhat premature infant; the other was syphilitic as well as premature.

III. *Puerperium.*

Of the 48 cases, 37 completed the puerperium with little or no rise in pulse and temperature worthy of remark; 6 were left over till next quarter, doing well; 2 were discharged somewhat debilitated, having suffered from pelvic peritonitis, which, under the usual treatment by antipyretics, opiates, and counter-irritants, made a fair but somewhat prolonged recovery. The following is an abstract from the case-book of the three fatal cases:—

Case I.—J. M., aged 29, primipara; last catamenia in the middle of March. Admitted 18th November 1880; delivered 18th November at 3.40 P.M.

[1] The forceps I now invariably employ—and with ever-increasing satisfaction—is the axis-traction forceps described in the September and October numbers of this Journal. With regard to an article in the February number, it will be enough to quote this sentence from a note which I lately received from Professor Budin of Paris: "M. Archibald Reith aurait bien dû lire attentivement votre mémoire avant d'ecrire son article. Il ferait bien de lire aussi le mémoire de M. Tarnier."

Labour.—Pains began at 2 A.M., 18th November. Os fairly dilated when admitted at 8.30 A.M. Presentation vertex; position R.O.P. On examining per vaginam at 10 A.M., the anterior fontanelle was felt low down and towards the left thyroid foramen, the posterior fontanelle being only just within reach and to the right posteriorly. At 12.30 P.M. the head was felt low down, flexion and a degree of internal rotation having taken place; the anterior fontanelle being high up towards the left acetabulum, the posterior easily within reach at a point opposite the right acetabulum. Left parietal bone presented, and the left ear of child was felt a little to the left of the symphysis pubis. At 3.40 P.M. the occiput was born beneath the symphysis, with external rotation to the right thigh of the mother. Attempts to expel the placenta by expression having failed, and the os uteri internum being found firmly contracted, at 4.25 P.M. (*i.e.*, 45 minutes after the birth of the child) it was agreed to give the patient chloroform, after which the hand was inserted into the uterus, the placenta freed from some attachments, and extracted with the membranes complete at 5 minutes to 5 o'clock. After extraction, ext. ergotæ liq. ʒj. was administered. The total amount of blood lost weighed 1 lb. 10 oz. No post-partum hæmorrhage.

Child.—Male, full term; length, 19½ inches; weight, 7 lbs. 12 oz.

Placenta.—Weight, 1 lb. 3 oz.; length of cord, 27 inches. A supplementary cotyledon (3 inches by 2¼) was connected by a neck of placental tissue to the main body of placenta.

Puerperium.—On the evening of 18th November the patient's temperature was 100°·2 F., and, with the exception of the following morning (when it was normal), was never below 100° till her death on the 28th, and even reached 104°·2 on the 25th, the eighth day of her puerperium. Symptoms of pelvic peritonitis were noticed on the third day, and were treated, as usual, by counter-irritation, aconite being given at the same time.

On the 22d (fifth day) patient complained of pain above the right knee, along the course of the internal saphenous vein; on the next day was seized with a severe rigor in the morning, after which her case became serious, and in spite of repeated doses of quinine her temperature remained above 100° F.

On the 27th there was painful swelling of both legs, which were cold and brawny, especially the left; the limbs were swathed with flannel soaked in decoct. papaveris, which gave much relief. Stimulants were now frequently given, but she never rallied, and died at 3.50 P.M. on 28th November. No post-mortem examination was allowed.

Notes of the Child.—On 27th November an erysipelatous blush was noticed over the middle finger of the right hand, the dorsum of the left hand, and to a slight extent over both feet, nates, and scrotum. Was dressed with carbolic oil, 1 to 60, and sent out to nurse on 30th November, when the right middle finger was still red, but the other affected parts better. Died on 3d December 1880.

Case II.—J. C., aged 18, primipara. Admitted 22d November 1880; delivered 22d November.

Labour.—Pains began at 6 P.M., 22d November, frequent and severe in character, the os being fully dilated at 9.10 P.M. Presentation vertex; position L.O.A. Duration of first stage, 3 hours 10 minutes; second stage, 25 minutes; third stage, 18 minutes. Artificial interference; membranes were ruptured with finger-nail, the os being fully dilated.

Child.—Male, healthy; weight, 7 lbs.; length, 18½ inches.

Placenta.—Weight, 1 lb. 2 oz.; length of cord, 22 inches.

Puerperium. — On the afternoon following the delivery, complained of severe abdominal pain, with symptoms of peritonitis, legs drawn up, anxious expression; evening temp., 102°·2; pulse 112. Poultices applied over abdomen, and tinct. opii given internally.

24*th November.*—Temp., morning, 101°·2; evening, 105°·8. Abdomen being still tender, was painted with tinct. iodi., and in the evening quinine gr. v. every four hours was administered.

25*th November.*—Temp., morning, 99°·3; evening, 104°·2. Discharge offensive. Quinine continued.

26*th November.*—Temp., morning, 100°; evening, 103°·6. Respiration, 28 per minute; the bowels moved four times during the night.

27*th November.*—Still great pain. Wandering delirium set in; pot. bromide and chlor. hydrate āā gr. xv. given. Lower half of abdomen blistered. Morning temperature, 103°·8; evening, 104°·2; tinct. aconite min. doses every half hour was given; turpentine ℥viij. given every four hours, and tinct. ferri perchlor. ℥xv. every two hours.

28*th November.*—Pain still very severe, and sleeplessness; also distressing vomiting; injectio morphiæ hypodermica ℥vj. was given at 9 P.M. Morning temp., 103°·3; evening, 102°·8.

29*th November.*—Still great pain and distressing vomiting; ice given to suck; the tincture of the muriate of iron discontinued, and morphia injection repeated at 11 P.M. Morning temp., 102°·2; evening, 103°.

30*th November.*—Temp., morning, 102°·6. Being somewhat better, she was removed to Ward 24 in the Royal Infirmary, where she died on the morning of 2d December.

The *autopsy* was made by Dr D. J. Hamilton:—

Heart weighed 9 lbs. 3 oz. Pericardial sac contained ʒ¼ of yellow serum. Aortic valves competent.

Lungs.—Right pleural cavity contained ʒij. of blood-stained serum.

Left Lung weighed 15½ oz., covered with recent fibrinous lymph, more especially posteriorly, very much congested. An opaque yellowish-gray patch about 2 lines long at the base, situated in the pleura, and probably a commencing abscess. The organ was

much congested and partially solidified, being apparently in a commencing state of croupous exudation.

Right Lung weighed 8¼ oz. Pleura covered with a coating of recent lymph, particularly the lowest lobe. There were some wedge-shaped deposits in the organ, very much like commencing abscesses, into which internal hæmorrhage had occurred; otherwise like the left lung.

Liver weighed 68 oz.; about half fatty; some patches of recent lymph on the surfaces.

Kidneys appeared to be natural.

Spleen weighed 5¾ oz.; covered with recent lymph.

Abdomen contained ʒviij. of yellow pus. Surface of intestines covered with recent fibrinous lymph becoming purulent. Omentum drawn down to the right side, and adherent to the cæcum and side of the uterus. The mucous membrane of the bladder was much congested, and in certain areas rough and granular. Mucous membrane of uterus much congested; opposite attachment of placenta on anterior wall was a firm, flesh-like projection, about the shape of a cock's comb, which appeared to be composed in great part of a vascular tissue. Cervix uteri much bruised. Three seemingly small superficial ruptures of mucous membrane at upper part of vagina. On squeezing the Fallopian tubes a large quantity of pus was expelled, and the tubes appeared to be distended with it; mucous membrane much congested. The left ovary contained a corpus luteum. Size of uterus 6½ in. by 4.

CASE III.—M. S., aged 22, primipara. Admitted 4th December 1880; delivered 4th December. Last catamenia, 1st–4th March.

Labour.—On admittance was far advanced in the second stage, the child being born within twenty minutes thereafter. Pains began at 8 P.M. 3d December. Presentation, vertex; position R.O.P., diagnosed from the situation of the caput, which was situated over the post. superior third of the left parietal; internal rotation having taken place before she came under observation. Duration of first stage, 7 hours; second stage, 7 hours 25 minutes; third stage, 15 minutes.

Child.—Female, alive; length, 20 in.; weight, 7 lbs. 1 oz.

Placenta.—Weight, 1 lb. 1 oz. Membranes were somewhat easily torn, and on expulsion were found to be detached from the margin of the placenta, except at one point for about an inch.

Puerperium.—On the morning following delivery was seized with a severe rigor. Temp. 102°·4, and pulse 75 in the morning; 102°·6 and 84 in the evening. Tenderness over whole abdomen, for which turpentine stupes were applied, and gr. v. of quinine every four hours.

Dec. 6th, i.e. 3d day.—Temp., morning, 102°·8; evening, 104°·8.

Pulse, morning, 86; evening, 98. Abdomen extremely tender; painted with tinct. iodi, and a draught containing castor oil ʒss. turpentine ℥x. and liq. morph. mur. ℥x. administered, after which the bowels were moved three times. Tinct. ferri perchlor. ℥xv. ter in die.

7th Dec.—Passed a better night, and felt relieved. Morning temp., 102°·2; evening, 100°·2. Pulse, morning, 72; evening, 91.

8th Dec.—Discharge offensive; morning temperature, 101°; evening, 103°·2. Pulse, morning, 70; evening, 84. As pain in abdomen still continued, lower third of belly was blistered; slight diarrhœa checked by an astringent draught.

At 1.30 A.M. 8th Dec. was called to see patient. She was wandering, with a tendency to delirium, and now for the first time breathing was noticed to be shallow and rapid. On percussion, note slightly impaired over left apex and right lower lobe; on auscultation, crepitations were to be heard over both sides, with harsh breathing.

9th Dec.—Respiration 36 per minute. Pulse, 94 per minute in the morning; 102 in evening. Temp., morning, 101°·6; evening, 104°·8. As diarrhœa continued, a starch enema with ℥xx. of tinct. opii was given, which gave relief. Brandy ʒij. every two hours, and a mixture containing ammonia, ether, and infus. senegæ every three hours—the sputum being viscid, difficult to spit out, and slightly tinged with blood.

10th Dec.—Respiration 52 per minute. Pulse in the morning, 100; in the evening, 102. Temperature, morning, 99°·2; evening, 100°. In the evening respirations were deeper and less rapid; stimulants continued.

11th Dec.—Bowels still relaxed; starch enema repeated at 1 P.M., and again at 5 P.M.; at 12 P.M. patient evidently sinking.

12th Dec.—At 1 A.M. in articulo mortis; pulseless; ♏xx. of ether injected subcutaneously, which caused radial pulse to return, but only for ten minutes. At 1·45 A.M. the patient sank. No post-mortem examination was made.

Extern Cases.

There were 110 women delivered.
Labours were classified as—

Natural labours, . . .	94	
Laborious, ...	4	
Preternatural, ...	3	110.
Complex, ...	7	
Abortions, ...	2	

All four *laborious* were delayed 2d stage from inefficient uterine contraction. Forceps used.

Preternatural.—Three pelvic and one footling.

Complex.—Accidental hæmorrhage, 3.
Post-partum, 2.
Retained placenta, 2.
Mortality.—(1.) Maternal, *nil.*
(2.) Fœtal, 4.
(3.) Infantile, 2.

It is but right that I should state, in connexion with this distressing mortality, that when I came on duty in the Hospital there was a patient suffering from a pernicious pelvic inflammation, who could not at once be removed to the Infirmary. The stringent antiseptic measures introduced by Dr Croom were continued in full force. The first of the three patients presented no peculiarity at the hour of my morning visit, and the house-surgeon had been careful to disinfect his hand before introducing it into the uterus for the removal of the placenta.

The second patient was a clear illustration of the risks of gonorrhœal colpitis in advanced pregnancy. She was a puella publica, somewhat under the influence of alcohol when admitted in advanced labour, with some warty bodies on the vulva.

Dr Craig regretted deeply the large mortality that had hitherto been experienced in connexion with their Maternity Hospital. In the first of the fatal cases the placenta was adherent, and it was three-quarters of an hour before it was extracted manually by one of the residents. He thought it was dangerous to wait so long, as the os became contracted, and required to be dilated by the hand. When the placenta was adherent, it should be promptly extracted whenever the true state of the placenta was ascertained.

Dr Croom sympathized with Dr Simpson in presenting his report. He held himself responsible for the fatal cases, however, as he left Dr Simpson a case of suppurative septic peritonitis. He thought the Maternity physicians should have fair play. Hitherto he had always entered on his duties with a legacy of a septic case, a state of matters arising from the fact that they had no means of isolating or removing such cases from the Hospital.

Dr James Carmichael thought this was a very serious matter. They should certainly have a reserve ward, detached as much as possible from the ordinary wards, to which septic cases could be removed.

The President remarked on the interest of the report. As regarded the management of the placenta, he did not see that the residents were in any way blameworthy. It would certainly have been gratifying if Dr Simpson had presented a clean bill of mortality. Dr Simpson had been kinder to him than Dr Croom, however, inasmuch as he had left no septic case in hospital when he (Dr Macdonald) came on duty. So far as he had gone, there had been no maternal deaths, although there had been one serious operation

at least. He thought Dr Croom right in his remarks. The Maternity physicians should have a ward near the hospital to which suspicious cases could be at once removed. He had been specially interested in the case of gonorrhœal colpitis of which Dr Simpson had given so lucid an account. Several years ago he (Dr Macdonald) brought this matter before the Society when he gave an account of some cases he had met with in practice. In one there was rapid death two days after abortion at the sixth month. On post-mortem he found the putrescentia uteri, both ovaries reduced to purulent pulp, and much pelvic peritonitis. He had no doubt that gonorrhœa in the puerperal state was very fatal. In another case the mother very nearly died from perimetritis; the child had gonorrhœal ophthalmia, lost one eye entirely, and made a narrow escape as regards the sight of the other. There was no doubt that the Maternity had greatly improved since the adoption of rigid antiseptic precautions, for which they were much indebted to Dr Croom.

Dr James Young and *Dr Gordon* agreed with Dr Craig in his remarks on the case of retained placenta.

Dr Hart thought the residents perfectly right in their treatment of the case of retained placenta. The rules given by Dr Craig were both dangerous and fussy.

Dr Simpson thanked the Society for the reception accorded to his report. Dr Craig misunderstood him if he thought the woman was left forty-five minutes without treatment, as the residents had first carefully tried expression. He believed they were quite justified in waiting as they did. It is not a matter of indifference to pass the hand into the uterus and remove an adherent placenta, especially in a Maternity such as theirs. In Germany the pendulum had already begun to swing back in regard to rapid expulsion of the placenta. Thus one of the most intelligent of German obstetricians, Professor Freund of Strassburg, had told him that he had no hesitation in leaving a patient in whom the placenta had not come away in the hands of an intelligent midwife. If the placenta did not come away next day, it would come away some time after. This was extreme, but it showed the opinion of some. In his case the delay of forty-five minutes did not add one whit to the patient's danger, as there was no hæmorrhage going on. Dr Croom had been kind enough to throw his ægis over him in regard to the fatal cases. They should remember, however, that of these the case of the second woman was beyond one's control; and the third case had been, by mistake, for a short time in the room along with her. The isolation ward was a good idea, but the difficulty was want of funds.

Meeting VIII.—March 23, 1881.

Professor Simpson, *Vice-President, in the Chair.*

I. *Dr C. E. Underhill* showed a fœtus with a large ventral hernia, spina bifida, imperforate anus, and feet turned backwards. The sex could not be determined by external examination. The case was under the charge of a midwife, who, finding she could not make out the nature of the presentation, sent for a medical man. On examination he found the hernia of the fœtus presenting. It was ultimately born without interference. He hoped to lay a more full account of the case, and another analogous one, before the Society at an early period.

II. *Dr C. E. Underhill* read the following Historical Note on a

CASE OF ABDOMINAL SECTION IN THE SIXTEENTH CENTURY.

The triumphs achieved by abdominal surgery of late years lend a special interest to cases in which operations involving the opening of the abdomen were performed by the older surgeons. The case I am going to relate appears to be one of the first in which a surgeon ventured to make an incision into the abdomen for the purpose of removing the remains of an extra-uterine gestation; and it is the more striking as the operation was performed during the existence of a second and natural pregnancy, and the patient recovered without any interruption of the pregnancy, which terminated naturally in due course. I came across it in the voluminous collection of curious cases collected by John Schenck of Grafenberg, which was published in Latin at Frankfort in 1609, under the title, *Observationum Medicarum, Rararum, Novarum, Admirabilium, et Monstrosarum Volumen.* The work is divided into seven books, and contains upwards of a thousand folio pages. The cases are collected from the writings of a large number of authors, of whose works a long list is given at the beginning of the volume. The case in question is quoted from the history of remarkable cases of Marcellus Donatus, and is to be found in Book IV., page 660, of Schenck's work. It was as follows:—In the month of March of the year 1540, at Castrum Pomponii, commonly called Pomponischi, in the province of the Lords of Gonzaga, not far from the river Po, there lived a woman whose name was Lodovica; but, in consequence of her great size, she was commonly called La Cavalla. Now this woman had at one time been pregnant; the fœtus had died in utero, and the soft parts had become putrid and been discharged through the vulva, while the bony parts had been retained within her. When she had recovered her health she again became

pregnant. Her health soon became seriously impaired, and she passed into a condition of the greatest danger. At this time there chanced to come to these parts a certain surgeon whose name was Christopher Bain, one of those who journey about, passing from town to town. As soon as he had heard of this woman's condition, which was fully explained to him by some of the neighbours, he offered to try and restore her to health, on condition that they should put her unreservedly into his hands, including her body if she died (*ac mortuam*), and should agree to pay him ten golden pieces if she recovered. Her relatives, who were poor persons, accepted his offer, some of the wealthier people in the neighbourhood helping them and promising to pay the money. The man, who was ignorant of letters, but a bold fellow, had the woman tied up, and set about the operation. Having slowly dissected through the longitudinal muscles of the abdomen and the peritoneum, he at last opened the uterus itself and extracted the skeleton of a male child. He washed out the uterus with warm wine mixed with certain aromatics, and united the lips of the wound by a suture, having burned with the actual cautery the part that was sewn in (*candentique ferro partem inconsutam inurit*). Wonderful to relate, the woman recovered, and in due time bore the other child, not only alive, but absolutely uninjured in any way. She subsequently conceived, not only once, but four times, carried her children to the full time, and was safely delivered. The case I have given is a remarkable one, but I am able to bring witnesses to its reality, namely, Dominus John Baptist Zorzonus and Alexander Begher, Dominus Frederick de Felini, and Dominus Leonellus Zorzonus, and Antonius Maiochus or Mazzuchinus, and several others, who were present at the whole operation.—*Marcell. Donat. Hist. Med. Mirab.*, lib. 4, c. 22.

Remarks.—The first question that rises about this case is whether it is true. I think we may assume it to be so from the very circumstantial manner in which it is related, as well as from the number of persons who are mentioned as having been present when the operation was performed. It is, moreover, unlikely that any one would invent an operation so bold and unusual at that period, and would relate it in such detail. If the case be not true, we can at all events remark that the inventor of it had a very clear and bold conception of the duties and possibilities of abdominal surgery. The case itself is obviously one of extra-uterine gestation in which the sac had opened originally into the vagina, and the soft parts having been discharged in a fluid state, the opening had possibly become obliterated. The operator made a very natural mistake in supposing that the sac which he opened into, and from which he extracted the bones, was the uterus, as gestation outside of the uterine cavity does not seem to have been known to surgeons or writers at that period. Parry[1] states that the existence of *tubal*

[1] *Extra-uterine Pregnancy*, by John S. Parry, London, 1876, p. 35.

pregnancy was first recognised by Riolanus the younger, who described it in his *Anthropographia*, published in 1649, and this seems to have been the first instance in which anatomical proof was given of gestation taking place anywhere but in the uterine cavity.

Schenck has collected several other cases in which the dead fœtus was extracted through the abdominal wall during the sixteenth century, but in all of them an abscess had formed and discharged, and one or more sinuses existed near the umbilicus. These sinuses were then enlarged and the fœtus extracted. But these are not true cases of gastrotomy properly so called, as Parry points out.[1] "If the cyst has contracted adhesions to the anterior abdominal wall, and has opened by one or more orifices upon its surface, the matter is a very simple one. Nature has indicated the way in which she desires to get rid of her encumbrance, and enlarging the orifice is an operation of little gravity." But in Bain's case there is no mention of any such adhesions or sinuses, and the description of the operation seems to negative such a supposition; and it appears to be the first case in which true gastrotomy was undertaken for this purpose. It is not mentioned by either Campbell or Parry, the latter of whom says:[2]—"The earliest case which we have been able to find upon record is that of Primerose, who operated in 1594. The history of this patient has become classical. She was twice pregnant with extra-uterine children, first in 1591, and again some time before 1594. The cyst of the first child opened spontaneously through the abdominal wall. The fistula was enlarged, and this child extracted by Jacob Nocerus, a surgeon. This operation proving successful, Primerose removed the second infant by gastrotomy two months later. It is easy to imagine how he was led to perform the second and more hazardous operation." This patient also recovered. Another successful case was reported by Platerus three years later, and after this there is no indication that the operation was performed for more than a century.

Although Bain's case is the first I can find recorded in which the operation was definitely undertaken for the purpose of removing a dead fœtus, it seems most likely that the classical case of Jacob Nufer, which is commonly referred to as the first recorded instance of Cæsarean section on the living woman, and in which a living child was removed in this way, was in reality a case of extra-uterine gestation. It is to be found in the collection of Caspar Bauhin; and it is so graphic and interesting that I venture to reproduce it here. It is thus related in E. von Siebold's[3] great *History of Obstetrics*, from which I have translated it:—

"According to the relation of Caspar Bauhin, in his Appendix to the Latin translation of Fr. Rousset's writings upon Cæsarean

[1] *Loc. cit.*, p. 223. [2] *Loc. cit.*, p. 223.

[3] *Versuch einer Geschichte der Geburtshülfe*, von E. C. J. von Siebold, Berlin, 1845, Band ii. S. 95.

section, Jacob Nufer, a swine-spayer at Sigerhausen, in Switzerland, in the year 1500 delivered his own wife by opening the abdomen, and the operation proved successful for both mother and child. The woman was pregnant for the first time, and when the time for her delivery arrived, and she had already suffered the most terrible pains for several days, there had gradually assembled at her bedside thirteen midwives and several lithotomists. But all of them together were neither able to relieve the poor woman of her child, nor to mitigate her sufferings. Thereupon the husband of this woman proposed to resort to the last means of saving her, and assured her that if she would take his advice, he hoped, by the blessing of God, to bring the case to a successful issue. She gave her full consent, and Nufer insisted further upon having the permission of the magistrate to his attempt. This, after some reluctance, was eventually obtained. Nufer next asked those of the midwives who had sufficient nerve for it to assist him at the delivery of his wife, while the more timid ones were requested to leave the room. Eleven of the midwives chose the latter course, while two of them, with all the lithotomists, boldly remained with the woman. The husband first besought the help of the Almighty, then closed the door, laid his wife upon a table, and made an incision in her abdomen, in the same way as he was accustomed to do to the swine (*non secus ac porco*). He opened the abdomen so cleverly at the first incision that the child was extracted without any injury. When the eleven midwives outside the door heard the baby cry, they wanted to come in, but they were not allowed to do so until the child had been washed, and the wound sewed up in veterinary fashion. The wound healed without any further mischance.[1] For after this abdominal section the woman bore twins, and was subsequently confined on four different occasions. The child which was delivered by this operation lived to reach the age of 77 years."

In commenting on this case, Von Siebold remarks, after expressing a doubt as to its veracity, that it was probably one of extra-uterine gestation, as no mention is made of an incision into the uterus, and points out that the difficulty in the first labour could not have been due to a very narrow pelvis, as the woman was subsequently delivered several times safely and without artificial help.

But, to return to Bain's case, it has this special point of interest, that it was performed upon a woman during the existence of a second pregnancy, and without causing a miscarriage. How far this second pregnancy was advanced we are not told. I have not been able to find any other case in which the operation was performed under these circumstances.

There are two cases on record, however, very like it, both of which

[1] No mention whatever is made of the placenta, either in this case or in that of Bain.

were twin pregnancies, one of the twins being inside, the other outside the uterus. In the first of these Dr Deocene[1] removed the extra-uterine fœtus at the end of the ninth month, and when doing so discovered the existence of the intra-uterine pregnancy. This second child he also removed at the same time by incising the uterus. The mother recovered, but both children were lost. The second case was that of Dr Salle[2] of New Orleans, which occurred in 1860, and in which there was no suspicion of an intra-uterine pregnancy until the pregnant uterus came into view after the removal of the extra-uterine child: it was then incised, and a living child removed. Both children lived, but the mother died in three days, probably of septicæmia.

We are now quite familiar with the fact that pregnancy is no bar to the operation of ovariotomy during its course, and that the women generally recover, while the pregnancy is frequently undisturbed, especially if the operation be performed during the first three or four months. Schroeder has operated seven times for ovarian tumour during the coexistence of pregnancy. All the women recovered, and only three of them miscarried—in one case, seven weeks after the operation. Olshausen collected fourteen cases in which ovariotomy was performed during pregnancy. Four only of these women aborted, and two died. Spencer Wells,[3] in operating under the same circumstances, had, up to 1877, performed nine such operations, all having recovered but one.

Cases of a similar kind have been reported by Thornton, Lawson Tait, and other ovariotomists. A still more remarkable instance of tolerance of operative interference occurred to Schroeder,[4] who removed by abdominal section, from the uterus of a woman who was sixteen weeks pregnant, three fibrous tumours, of which one was as large as an adult head. The patient recovered, went on to the full time, and was safely delivered of a living child. Mr Knowsley Thornton has also removed by abdominal section a fibroid from the uterus of a woman who was seven months pregnant. She miscarried within twenty-four hours, and died a few days later from bowel obstruction.[5] The only other points in Bain's case to be noticed are that he used a modified antiseptic application in the form of "warm wine mixed with certain aromatics" for washing out the sac, and that he employed the actual cautery, apparently to the edges of the sac, but the Latin does not make it clear whether it was to it or to part of the edge of the external wound that this application was made.

[1] *Gaz. des Hôpitaux*, 1852, p. 175.
[2] *New Orleans Med. Journal*, October 1860, p. 727. Both these cases are quoted by Parry.
[3] *Obstet. Transactions*, vol. xix. p. 286.
[4] "Die Laparotomie in der Schwangerschaft," *Zeitschrift für Geburtshülfe und Gynäkologie*, Band v. Heft 2, Seite 383.
[5] *Obst. Trans.*, vol. xxi. p. 163.

It was agreed to discuss the paper along with the next one, by—

III. *Professor Simpson*, who gave particulars of a CASE OF CÆSAREAN HYSTERO-OÖPHORECTOMY, OR PORRO'S OPERATION, of which the following is an abstract:—

The patient was the subject of rickets, and had a pelvis with an internal conjugate of 2¼ inches, who, at her four previous confinements, had been delivered by destruction of the child. The operation was performed antiseptically in the last week of pregnancy according to calculation, and before any dilatation of the os uteri had commenced. The incision was 5½ inches long, ending 1$\frac{3}{16}$ inches above the symphysis pubis. The uterus was incised immediately on the peritoneum being opened, and the child, which was strong and living, extracted by the head. The uterus was projected through the abdominal wound, and a piece of stout whipcord tied firmly round the broad ligaments and cervix. Permanent ligatures were then passed, one controlling the ovarian arteries and venous plexuses on each side, a third embracing the isthmus uteri and uterine arteries. The uterus was then amputated, the whipcord cut and removed, the ovaries cut away, and the whole stump seared with the Paquelin cautery. On sponging out the abdomen the ligature was slightly displaced, and some oozing occasioned, to check which the central portion of the stump was again secured in two parts, and the cautery again applied. The ligatures used were of strong carbolized silk. The abdominal wound was then closed. The temperature rose the same evening to 100·8°, and she died on the third day. On post-mortem examination there was evidence of commencing peritonitis. The writer then gives and analyzes a table of 72 operations performed up to 1st April 1881, and enters into a historical account of the various modifications that have been proposed of the Cæsarean section. He considers at length the technic of the operation, and in regard to the management of the stump states—"The favourable results obtained from this intraperitoneal method of treating the stump of ovarian tumours —results much more satisfactory than those obtained by the use of the clamp—lead one to believe that, in Cæsarean hysterooöphorectomy, it will betimes also give better success; but as yet the results have been disappointing."

Dr C. E. Underhill remarked on the interest and value of Dr Simpson's account of this rare operation. He believed there had been no case of Cæsarean section on the living woman in Edinburgh within the memory of any of our present practitioners. He sympathized with Dr Simpson in the want of success in the case, so far as the mother was concerned. Porro's method of performing the operation seemed likely to supersede the old plans, at least in Europe. The only point in it yet to settle was as to

the treatment of the pedicle. All the cases where the pedicle had been treated intra-peritoneally had proved fatal. This point deserved careful consideration. Müller's modification had been used with advantage where the woman had been a very long time in labour. By it there was less loss of blood, and no escape of the uterine contents into the abdominal cavity. He felt indebted, along with the other fellows, to Dr Simpson for his graphic account of the case.

Dr Gordon believed that in cases of Cæsarean section the patient had a better chance if the uterus was left.

IV. *Dr Milne Chapman* then read his note

ON A METHOD OF TREATMENT FOR CERTAIN KINDS OF INCONTINENCE OF URINE.

The class of cases I would refer to are not those where incontinence is complete, but where there is compulsory frequency of micturition, and where, on testing the bladder retaining capacity, it is found to be less than the normal. The following case, which was lately under treatment in the Royal Infirmary, will serve as an illustration :—

Mrs C., æt. 58, complained of frequent and painful micturition, which had lasted 3½ years. When she first took ill a doctor told her she had inflammation of the bladder and some urethral affection (caruncle ?), for both of which he treated her. On September 30th, 1880, it was found that she could only retain water half an hour. The pudenda were reddened, as was also the whole vagina. The urethra was somewhat gaping at its outlet. There was considerable pain evinced on rubbing the two walls of the bladder over one another or on introducing the sound into the viscus. The urine was turbid, acid, and contained pus cells, bladder epithelium, and some oxalates. The urethra was dilated by the finger, with the result of increasing the bladder's retaining limit to 1½ hours. At the same time nux vomica and uva ursi were given, and the vaginitis treated by sedative applications. The good effects of the dilatation disappeared in about three weeks, and it was then repeated, but soon she again relapsed into her former condition, minus, however, the pain and the presence of pus in the urine. The urethra was examined by the endoscope, and a slight redness was noticed. Iodoform bougies were used. The condition of the bladder wall, as seen by the endoscope, was normal, and now (Nov. 8th) her only trouble was that every hour, day and night, she had to empty her bladder. The total quantity of urine passed was 50 ounces, which gave little more that 2 ounces as the amount at each micturition. The sound passed into the bladder 3 inches from the external meatus, and it was found that it could only be pushed half an inch farther, and that thus pain was caused. It occurred to me that gradual forcible

dilatation of the bladder might relieve the patient, and, with Dr Angus Macdonald's permission, I proceeded to submit this idea to trial. The bladder was distended with warm 2 per cent. carbolic solution, and the quantity used measured and found to be 4 ounces. Any attempt to inject more caused the most intense pain, and the resistance offered was great, as could be felt by the difficulty experienced in compressing the ball of the syringe. From this date the bladder was filled to distension daily, the injection being stopped when the patient's pain became great and when resistance reached a high point. The apparatus used was a Higginson's syringe attached to an ordinary catheter, care being taken to prevent the access of air to the bladder. Each day there was a gradual increase in the amount injected of from a drachm to an ounce. On two or three occasions the fluid as it returned was tinged with blood, but no harm ensued. On December 20th she was discharged in the following condition:—Instead of micturating every hour, she had only to get up once or twice during the night, and by day she could retain water so well as not to be inconvenienced. Sixteen ounces could now be injected into the bladder, and less pain was thereby caused than formerly when four ounces was the limit. The urine was normal in all respects. Two months later she reported herself as being still as well as when she left hospital.

It will be seen from this case that the woman had a cystitis with frequency of micturition, which latter remained after the former was cured; that any indication there was for further treatment was attended to either medicinally, topically, or by operation, but that still the frequent micturition continued; that the bladder was then found smaller than normal, both by measurement with the sound and by the much more certain method of measuring its capacity, and that this capacity was increased fourfold by what may be called *slow operative dilatation of the bladder*, and that the results were in all respects satisfactory.

In presenting this case to the Society, I have purposely refrained from either theorizing on the subject or trying to draw conclusions, as neither would be justifiable from a single observation. But, as it happens, there has this week presented itself at the Infirmary a case of cystitis where the bladder capacity is three ounces, and we propose soon to begin dilatation as a remedial measure. In due time, when further observations have been made, I hope to be able to lay the results before the Society.

Dr C. E. Underhill congratulated Dr Chapman on the very successful issue in this case. They all knew how difficult cases of cystitis were to treat, and accordingly were gratified when a new and successful method for the cure of a distressing malady was brought before them.

Dr Hart had listened with great pleasure to Dr Chapman's able

paper. It was difficult to explain how hyperdistention benefited the case. The method was possibly analogous to the hyperdistention by carbolized water of abscess cavities practised by the late Mr Callander of St Bartholomew's. Mr Ogston of Aberdeen believed that this acted by bringing an antiseptic thoroughly in contact with the abscess wall, and thus more actively counteracting putrefaction.

Dr Milne Chapman thanked the Fellows for their reception of his paper. Probably the explanation given by Dr Hart might hold good in cases where cystitis was still present along with diminished bladder capacity. The case reported, however, was one where the causal cystitis was cured before the distention treatment was commenced, and the object of this latter was to cure the resulting incompetence.

MEETING IX.—APRIL 13, 1881.

Dr ANGUS MACDONALD, *President, in the Chair.*

I. *Dr Macdonald* showed (1.)—A very large CALCULUS, with a hair-pin transfixing it, removed from the bladder of a young woman, where it had remained for fifteen months. It lay with its two free ends near the urethral orifice, the most tender part of the bladder. This showed that the views urged by Dr Hart as to the bladder —viz., its being, when empty, in a state of collapse, and not contracted—were correct, as this foreign body caused no inconvenience until large. He removed it easily by vaginal incision. (2.) A long CERVICAL POLYPUS. The case had been diagnosed as one of prolapsus uteri, and had actually been treated by caustic and a pessary.

II. *Dr Halliday Croom* showed a TWIN PREGNANCY AT THE FOURTH MONTH. The patient, who was four months pregnant, presented all the appearance of a woman in the eighth month of pregnancy. Hydramnios was diagnosed, and while the patient was still under observation she aborted. The amount of liquor amnii was very great. Besides a large quantity which could not be collected, Dr Croom removed about two quarts and a half. The placenta was single, the chorion common, and amnion double. The fœtuses were of the same sex, both males. Patient did well.

III. *Dr Glaister* then read his paper on

AN UNUSUAL EXPERIENCE OF PLACENTA PRÆVIA, WITH NOTES OF CASES.

PLACENTA PRÆVIA is at all times a condition which adds considerable anxiety to the practitioner and a very much greater degree of danger to the life of the patient and her offspring than most of

the conditions in which we are called upon to assist a woman in the trials of maternity. My experience consists of *five* cases, and these occurred within *nine* months—a somewhat unusual experience, no one will gainsay.

Within the year 1880 I met with five cases of placenta prævia, in three of which the placental presentation was complete, and in the remaining two it was partial, but nearly complete. My first case was in March, second in May, third in June, fourth in July, and the fifth in November. By a curious coincidence three of them happened in the same street, within one hundred yards of one another, the fourth being in a side street running off the street previously mentioned, but about two hundred and fifty yards further away. Four of them were at the full time, the fifth at 5½ months. In these four cases the children were delivered by turning, three being born dead. The fourth, however, had cardiac pulsations, but resuscitation failed. In the fifth case the fœtus was not born.

As regards the mothers the result is briefly this:—Two of them made good recoveries, though slow; the third died of chronic phthisis four months after; the fourth died suddenly about three weeks after, having been able to move about again; and the fifth died before delivery. In two of the cases there were repeated floodings before confinement, and, curiously enough, they made the best recoveries; in another (the fifth) there were *two* sharp hæmorrhages; in another (the third), one; and in the fourth there was no premonitory hæmorrhage whatever. In all the cases the hæmorrhage during labour was very copious, and, as has been pointed out by some writers on obstetrics, may so far account for the still-births.

Case I.—Mrs A., ætat. 36, the mother of several children, was confined of another on the 25th of March, a midwife being engaged to attend her. She had had repeated floodings during the latter months of pregnancy. Labour began on the forenoon of the 25th, and was attended from the beginning with considerable hæmorrhage. I was asked to see her in the evening about 8 P.M. Her pulse was then very weak and rapid; face exsanguine and bathed in cold sweat; extremities cold; respiration sighing; and she was being seized with frequent fainting fits and retchings. Vaginal examination revealed complete prævia. The placenta was broken up into a shreddy condition, particularly in the central part, this having been done by the midwife's finger in order to discover the presentation. Liquor amnii had drained away. Hæmorrhage had nearly ceased, and the vaginal walls were quite dry and glazy to the touch. A cranial presentation was found beyond the placenta.

Considering all the circumstances, I concluded to do nothing precipitate, therefore satisfied myself by plugging the vagina with

a large sponge wrung out of sharp vinegar, and administering opiates and small but frequently repeated quantities of concentrated nourishment and stimulants. About 11 P.M. I left her somewhat improved, with the instructions that I should be sent for should any fresh bleeding occur.

Next morning about nine I was sent for, owing to pains having come on, and arrived at the house just in time to see her delivered of a still-born child. The placenta was easily expressed, and the uterus contracted nicely. From the mangled state of the placenta, I am not prepared to assert positively that the child was born through it or not. She made a good but slow recovery.

CASE II.—Mrs P., ætat. 32, the mother of two children. This case was met with under nearly similar circumstances, in so far as it had originally been under the care of the same midwife. She had repeated attacks of hæmorrhage before delivery, which had much weakened her. Labour began on forenoon of 3rd May, attended by very severe flooding. I was asked to see her about 6 P.M., the flooding still continuing, and she was seized occasionally by attacks of syncope. She presented most of the general appearances of the first patient. Vaginal examination revealed partial prævia. The placenta, occupying about two-thirds of the cervical zone, was lacerated and rent in the same way as before. Through these lacerations a cranial presentation could be felt, and the fact ascertained that the "waters" had drained away. On account of the hæmorrhage and the fairly well dilated condition of the os, I concluded at once to deliver by turning. I accordingly delivered her of a still-born male child with a good-sized head, which occasioned a little trouble. Placenta was expressed within ten minutes after, the uterus contracting nicely. The loss of blood from beginning to end of labour was very considerable, but she made a slow and steady recovery.

CASE III.—Mrs N., ætat. 39.

Previous History.—She had never borne a child at full time, but had a miscarriage at six months several years ago. About November or December 1879, owing to a swelling in her abdomen, she consulted a surgeon, who, she said, pronounced it a tumour in connexion with the womb. As the swelling continued to increase, she consulted another surgeon, who declared she was pregnant. Labour began on the afternoon of 5th June with a severe flooding, examination at once revealing it to be a case of placenta prævia. The vagina was at once firmly plugged, but, nevertheless, the hæmorrhage was not completely controlled. Pains came on slowly. The case was one occasioning not a little anxiety, owing to her age, its being her first confinement, her very nervous temperament, the existence of a heart affection, and a frequently intermitting pulse. About 9.30 P.M. the os became sufficiently patent to allow

the introduction of three fingers, when it was ascertained that the placental presentation was complete. We then concluded to turn. After turning, which was not very easy, the child was born, inanimate to all appearances; but we discovered occasional cardiac pulsations, which incited us to perseveringly carry on attempts at resuscitation till even these had ceased. The mother was, after delivery, wonderfully well. Her pulse was of fair strength, but rapid and more frequently intermittent. The placenta was delivered easily. She recovered so well that attendance ceased at the end of two weeks. About a week after this the medical friend who was with me during the case, was hurriedly called one night to see her, she having been taken suddenly and seriously ill. On his arrival a few minutes after, he found her in bed, gasping wildly as if for breath, with a pale, pinched face. In about two minutes after, she was dead. It seems that she had been visited by friends that evening, and had been unusually animated. The nurse, fearing some harm from this, advised her to go to bed. This was done, and she was in the act of stepping into bed when she was seized with this sudden attack. The opinion of my friend was that she had died from internal hæmorrhage, probably due to rupture of an aortic aneurism. Unfortunately, no post-mortem examination was obtained.

Case IV.—Mrs G., ætat. 38, mother of a large family.

Previous History.—Nothing of note occurred in her previous child-bearing history, but she had suffered for some years from chronic bronchitis, and had also been addicted to the abuse of stimulants. On the 3rd July I was called to see her, owing to the occurrence of flooding, which I found was due to placenta prævia. She had then a very severe cough and copious muco-purulent expectoration. Examination of lungs showed moist bronchial râles over whole chest, with prolonged expiration. She was much emaciated. Three days after I was again hastily summoned. I at once plugged firmly the vagina and waited. I was quite expecting to find her collapse from loss of blood if it continued, on account of her debilitated state. After an interval of about two hours the os had sufficiently dilated to enable me to detect a *partial* placenta prævia and a cranial presentation beyond. Before this the membranes had ruptured, and the waters were drained away. Hæmorrhage continued, and I concluded at once to turn. This was done, and a child delivered still-born. She was now very low, but on the free administration of stimulants she rallied somewhat. Expression of uterus failed to expel placenta, and on introducing my hand I found it adherent in all its attachment. For some days after she looked as if she would not rally; temperature above normal, and pain over uterus. Abundant purulent discharge now made its appearance from the vagina, which, however, abated on the use of injections of warm water and Condy's fluid. She, how-

ever, failed to get up her strength, the lung symptoms asserted themselves more strongly, she became more and more emaciated, evidences of a cavity in right apex now existed, and she died about four months after confinement.

CASE V.—Mrs G., ætat. 30, the mother of one child.

Some years before she had been delivered of a male child after a difficult instrumental delivery, during which she says she was much bruised and cut. From this there resulted a vesico-vaginal fistula. The persistent dribbling away of urine, and an after affliction of tape-worm, had both physically and mentally depressed her, so that when I was called to see her she had lost very much in bodily weight. I was called to visit her on 4th of November on account of a flooding. Vaginal examination revealed a patulous os, into which, however, the forefinger could hardly be introduced. It further revealed a vesico-vaginal fistula high up, just in front of anterior lip of os uteri. I contented myself with thinking it a threatened abortion, and treated it accordingly. From this she recovered. About a week after, however, she had another attack of flooding. During the forenoon of the 25th I was told that she had been flooding sorely since 5 o'clock that morning; and I found her very much weakened through loss of blood. The os was now wide enough to admit the finger, and the doughy placental mass was at once discovered. I plugged, waited, and administered stimulants. The plugging controlled the hæmorrhage till about 4. P.M., when it again appeared, but not to any serious extent. About 8 P.M. the bleeding became very free; and separating, as far as I could, the placenta according to Barnes's method, I again plugged. I adopted this procedure in preference to manual dilatation of the os, because I feared the shock resulting from the introduction of the hand into the uterus might induce fatal syncope. The result of the case proved in favour of my judgment, because she rapidly sank after this, and died about 9 P.M. The placental presentation was complete. This case seems to me interesting in so far that conception had resulted after the establishment for several years of a vesico-vaginal fistula.

It seems to me, from the above experience, that no hard and fast line can be drawn as to the treatment of cases of this kind; and that however strongly some may insist on the speedy delivery of the child, each case must be treated on its individual merits, since we do not meet with it in patients of the same strength, nor at the same period of time in the course of pregnancy.

Dr C. E. Underhill thought the Society indebted to Dr Glaister for his interesting communication. Dr Glaister's experience was

certainly rare, although he had read in Dr Fordyce Barker's book that he had once met with five cases of eclampsia in one day. He congratulated Dr Glaister on his management of several of the cases, particularly the first one. He was surprised Dr Glaister did not make any mention of the use of Barnes's bags, which plugged and dilated slowly. He was doubtful if plugging the vagina could be depended on as a safe practice in cases of placenta prævia. In an article in the *American Journal of Obstetrics* the result of dilatation was shown to be better than that of plugging the vagina.

Dr Croom congratulated Dr Glaister on the management of his cases. He thought he was quite right in leaving one of the patients alone until she rallied.

Dr Bruce thought the remarkable feature in the cases was their all occurring in such a short space of time. He agreed with the treatment adopted. Barnes's bags were useful in some cases; but where the os was not dilated enough to allow of their introduction, he would plug the vagina.

Dr James Young said that he had met with comparatively few cases of placenta prævia. In certain circumstances he adopted treatment by plugging, but dilatation by means of Barnes's bags was the correct one, as it not only arrested hæmorrhage, but enabled the accoucheur to deliver the patient very speedily and thus save life, which, in such cases, is so frequently imperilled.

Dr W. L. Reid, Glasgow, had listened with profit to the paper. He wished to ask as to the effect of the separation of the placenta, and to hear whether it was effectual in stopping the hæmorrhage. As to the resuscitation of the child, he practised Schultze's method, and had found it most satisfactory. He had seen a case in Schultze's own practice where it had been used for an hour with a successful issue. If you wait for the cervix to dilate, you may wait too long; the cervix, when the hand is carefully dilating it, yields in a quite remarkable way.

Dr Macdonald agreed in the value of the paper. Unusual cases do run together. He agreed with Dr Reid in regard to the use of Schultze's method in opposition to Sylvester's, though he sometimes combines them. In dealing with placenta prævia a man must act according to his lights and with the materials before him. The more he saw, the more he was satisfied that if the case is seen in time, and the hæmorrhage goes on, we ought to go on at once to delivery, because waiting for dilatation or till the full time of labour is a serious risk. Barnes's dilators can be passed through a very small os. He had seen plugging on many occasions, and he did not think we could rely on it to any great extent. There is no treatment for placenta prævia but delivery. Of all the methods of doing this, the use of Barnes's dilators, with delivery as soon as possible, is the best.

Dr Glaister said he was pleased to come, and was pleased at the reception his paper had met with. He had come because his cases occurred so frequently and so close together. Every case must be delivered on its own merits, and in each case we must deal with the facts as we find them. He had not bags at hand in any of the cases where they might have been of use. In the third case the plugging was not effectual, and he proceeded to delivery, and the child was only lost because the os remained so rigid.

IV. *Dr Halliday Croom* then read his paper on

A COMPLICATION OF OCCIPITO-POSTERIOR POSITIONS OF THE VERTEX.

THOUGH much has been written on the subject, occipito-posterior positions of the vertex offer a wide field for study. The frequency of this deviation from the normal standard is sufficiently marked to warrant us in endeavouring to trace out every complication which may accompany the position. Without detaining you with statistics, I should like to draw attention to the fact that, out of 414 births which have taken place in the new Maternity Hospital since May 1879 up till the present time, 59 occipito-posterior have occurred, *i.e.*, 14 per cent., or 1 in 7. In the present communication I wish to limit myself entirely to an inquiry into one of the complications met with in this form of cranial position. It may be broadly stated that the complications of occipito-posterior position resolve themselves into two sets—1. Those met with in the first stage of labour; 2. Those met with in the second.

During the first stage of labour occipito-posterior positions are unquestionably a common cause of delay. This delay is, no doubt, frequently enough incorrectly referred to simple rigidity of the cervix. In some cases there may be rigidity as a complication; but where the parts preserve their normal tone and elasticity, and where the head and pelvis are of normal size, delay in dilatation of the cervix from the position of the head alone is by no means an uncommon occurrence. The explanation of this delay is not difficult to discover. If a digital examination be made early in the first stage of labour, the finger will recognise, not the posterior fontanelle, but the anterior extremity of the sagittal suture. In other words, from the obliquity of the uterus and the resistance of the tissues in the neck, the occiput is carried against the pelvic wall of the uterus and the sacral promontory, and a certain degree of extension is the result.

Now, it seems that this degree of extension, this difficulty in completing flexion and of driving the flexed head into the pelvis and bringing it to impinge on the os uteri—constitutes the main difficulty in occipito-posterior positions all through labour. For the same reason the cervix suffers to a greater extent in occipito-

posterior than occipito-anterior positions, the dilatation required in the one case being greater than in the other.

Meigs says, "When the vertex is to the front it enters the os uteri favourably, and passes through the orifice with a circumference of 10½ inches, or a circle of 3½ inches diameter; but when in a posterior direction, the latter acquires a circumference of 12½ or 13 inches.

A further complication is met with in the second stage when the resistance of the pelvic floor is encountered and rotation takes place. With any of the three possibilities of rotation there is delay. 1. *If forward*, there is double the distance to travel to that demanded in a first or second position. 2. *If backward*, the uterine force drives the head against the floor of the pelvis. The result is, instead of the head being pushed up from the floor of the pelvis and escaping under the pubic arch, it rolls back into hollow of sacrum under the sacral promontory. Here again the essential thing to do is to obtain flexion. It is no part of my present object to discuss the important practical question which here arises, whether we can hope for a change spontaneously or by art. The main point is to secure flexion. But a *third* possibility may occur, again, as a result of want of flexion, that is, when the pelvic resistance behind prevents descent and flexion, and when the head becomes jammed more or less transversely. It is to the result of the third possibility that the present communication has reference. Beyond the complications to which reference has been made, the increased laceration of the perinæum in these cases where the head is delivered persistently posterior, whether spontaneously or by artificial aid, must not fail to be mentioned.

The following cases are illustrative of the third variety of occipito-posterior, viz., those in which neither the anterior nor posterior rotations take place spontaneously, but where the head remains jammed between the lateral pelvic walls, and where, as a result, there is more or less extensive injury to the soft parts in the pelvis, this injury being uniform in its location and nature.

I. The first time the condition was brought under my notice was on beginning duty at the Maternity Hospital in August 1879.

It has been my habit ever since my appointment to the Maternity Hospital to examine each patient per vaginam on the tenth day post-partum. I am aware that objections have been raised to such a procedure. This is not a fitting opportunity to discuss these. I will only say that I have derived much valuable information from such examination. In many cases I believe I have been able to give useful advice to the patient, and, certainly in no case am I aware of having caused the patient temporary suffering or permanent injury. Carried out with ordinary antiseptic care, with gentleness, and with a due regard to the patient's feelings, I am unable to appreciate the objections that have been raised. On the contrary, I would strongly advocate a similar careful examination of

each patient some weeks before delivery. Many complications might be foreseen, and accidents avoided.

The first post-partum examination I made on assuming duty in the Hospital in August was on a patient who had been left over from the previous quarter. The report by Drs Murray and Adam is as follows:—

6*th August.*—Perinæum torn down to within half an inch of anus. On the right side of the pelvic wall, in the region of the right ischial spine, there is a distinct opening. Its edges are smooth and incurved. It admits readily two fingers, is about an inch in length, and its direction, as ascertained by a probe, is downwards and backwards. Through the opening the ischial spine can be felt.

Left side normal.

Cervix forms but a slight projection; its edges are ragged and tender. It is bilaterally fissured, more deeply on the right side.

Uterus normally situated.

The examination causes no pain, except when the edges of the sinus are touched, when the patient cries out.

The previous history:—Patient, a multipara in her fifth confinement, each a forceps case, was delivered on the 28th July. The presentation was vertex, and the position right occipito-posterior.

The first stage was completed in five hours; second stage, three hours. Owing to the delay, forceps was applied, and the fœtus delivered with backward rotation of the occiput. On the patient's dismissal from hospital three weeks after delivery, the sinus was still open, and admitted a probe at least ¾ of an inch.

Case II.—In private practice, a primipara, æt. 21. Labour began at midnight. At 8 A.M. I found the os well dilated. Head R.O.P. At 9 the membranes ruptured. At 9.30 the head had cleared the os, was descending R.O.P., with extension marked. The pelvis was deep. At 1 P.M., as no progress was made, a careful examination was made by Dr George Mackay and myself. We found head extended, the occiput lying just over the right iliac spine, in front of the oblique diameter.

Forceps was applied, and delivery easily effected. There was no attempt to rectify the position, but simple traction was made, resulting in the forehead coming under the arch of the pubes, and the occiput sweeping over the sacrum and perinæum. There was a considerable tear of the perinæum. The patient, it is to be observed, was in the second stage from 10 till 1, a period of three hours. The perinæum was stitched.

The patient required to have her urine drawn off for three days. She completed her puerperium without any pelvic pain, but with a slight rise of temperature. On the 10th day the stitches were taken out, and a per vaginam examination. Perinæum completely healed. On the right vaginal wall there is a deep sinus. The edges are smooth and bevelled. The wound easily admits

the tip of the forefinger, and is not tender. On introducing a probe it is found to pass in one inch, direction downwards and backwards. Through the wound the ischial spine can be distinctly recognised. Muco-purulent discharge is profuse. At the end of six weeks:—The wound is felt almost closed. There is still a deep furrow. I had occasion to make an examination of the patient a year afterwards, and found the cicatrix well marked.

Case III.—An extern hospital case, seen with Dr Maculloch, resident physician, Royal Maternity. The patient, a young Irish woman, a primipara, had been in labour for fifteen hours, ten in the first stage, and five in the second. The pains were strong, and the head right occipito-posterior, but tending to transverse. I applied forceps, and delivered easily, not, however, without a considerable tear of the perinæum. There was backward rotation of the occiput. The pelvis was a deep one. The perinæal tear was immediately stitched.

The puerperium was uncomplicated. On 10th I removed the stitches, and found the following condition:—Perinæum healed. On the right pelvic wall there is a distinct laceration over the sacrosciatic lig. and the ischial spine, admitting easily two fingers. The edges are smooth, but tender; a probe enters readily 2½ inches upwards. There is a considerable muco-purulent discharge; cervix deeply torn on the right side. Uterus normal. With the further history of the case I am unacquainted.

Case IV.—Private practice. A lady, who had previously been delivered of her first child by a friend in the country, was recommended to me by him for attendance during her second confinement. Her first delivery was aided by forceps, owing to the backward position of occiput. I have no other particulars concerning it. Her second labour occurred on 10th December 1879, when I saw her at 10 A.M., she having been in labour since 10 the previous night. I found the head had passed beyond the cervix and was right occipito-posterior, the posterior part of head lying over the right ischial spine. The outlet seemed small, and the pelvis deep. At 12 noon, as no progress was made, I applied forceps and delivered a persistent occipito-posterior head. The perinæum, which had been considerably torn in her first labour, was not further injured.

On the third day she had difficulty in passing water, and on the fourth I had to draw it off with a catheter. This I had to do for several days. As I was anxious to know the cause of the retention, I made a vaginal examination, and found:—An old tear of the perinæum. On the right pelvic wall there is a deep laceration easily admitting two fingers; its direction is down and back; very tender; left side normal. Cervix deeply torn on the right side. The edge of the cervical tear is flush with the roof of the vagina. There was no constitutional disturbance worthy of note. The vagina was well washed out twice daily with an antiseptic lotion. At the end of six weeks the wound was rapidly closing, but it was three months before it absolutely healed.

Her next confinement took place in December 1880. When I reached the patient the head was well down in the pelvis, close to the vulva. The patient, who had always been averse to the attendance of a doctor, only allowed the nurse to send for me after she had been in labour ten hours, when she was worn out and desirous of having chloroform administered. I administered chloroform; and as the head was small and well down on the perinæum, I allowed nature to complete the case. The head was born with the occiput backwards half an hour after my arrival.

On the third day post-partum she again complained of retention of urine. Before using the catheter I insisted on a vaginal examination, which was submitted to with reluctance. I found the perinæum without any fresh tear. On the right pelvic wall I found a distinct solution of continuity sufficient to admit easily the tip of my forefinger. Its location was just over the site of the previous injury. The cervix was bilaterally fissured, the right side being the deeper; otherwise the parts were normal. Before leaving the patient at the month's end I was allowed an examination, when I found the sinus healing, but not closed.

The records of these cases show a marked similarity. In each there is a special cranial position, and a special pelvic lesion along with it.

Judging from the foregoing cases, given a right occipito-posterior position of the vertex, delayed in its rotation at a particular point in the pelvis, a more or less deep injury to the soft parts, resulting in a sinus, is likely to occur. Injuries and lacerations of vagina are common enough in labour with a contracted pelvis. Schroeder has drawn attention to this.

Dr Angus Macdonald,[1] in an instructive paper on occipito-posterior positions, makes a short reference to laceration of the soft parts. He writes as follows:—"Of those which terminated face to pubes, four of the mothers were primiparæ, and two multiparæ." In those six cases which ended as "face to pubes," in *one* case only, and that, too, a multipara, did there occur anything other than the most trifling laceration of the soft parts. In this case the laceration, which was not at all severe, affected the back wall of vagina without affecting the perinæal tissues. It soon healed up, and gave no inconvenience.

Both Schroeder[2] and Macdonald refer to these lacerations, but give them no definite location in the pelvic cavity. They both further refer them to the use of the forceps.

Let us now proceed to examine the vaginal lesion as met with in the cases recorded, as well as its causation.

1. *Its Position*, on the right side of the pelvis, on a level with and including the right ischial spine. On passing the finger into the opening the spine can readily be felt.

[1] *Transactions of Edinburgh Obstetrical Society*, vol. iii. p. 361.
[2] *A Manual of Midwifery*, p. 305.

2. *Its Extent and Direction.*—In the recorded cases the sinus was from one to three inches in length, and its direction in three downwards and backwards, and in one upwards.

3. *Its Causation.*—The head descends slowly, slightly extended in the left oblique diameter, until it reaches the floor of the pelvis. Here the elastic, resilient posterior wall of the pelvis, aided by the forward and downward inclination of the ischium, attempt to throw the head forwards. If the pelvis be normal, and the head of average size, this is actually what takes place in the vast majority of occipito-posterior positions. If, however, the ischial planes are nearly parallel, that is, if the normal slope is diminished, and if the ischial spines be prominent, as in the masculine or deep pelvis, then the advantage and cause of cavity rotation are lost. The head descends in the oblique diameter, the usual forward rotation is attempted, but the head becomes jammed over the ischial spine. The head, somewhat extended, becomes fixed, and the pressure so caused results in a slough which involves the right ischial spine. This mechanism somewhat resembles that met with in a rickety pelvis. If rickety mechanism consists in transverse descent and extension of the head, then to a certain modified extent that is what we meet with here; the depth and extent of the slough and sinus bearing a distinct reference to the length of time the head has remained fixed. It is clear, however, that but a short delay of the head in this particular position will cause a vaginal sinus of very considerable dimensions. This is well brought out in Case II., where, in a primipara in whom the second stage was scarcely three hours, a sinus of two inches in length resulted. Now, these sinuses in this particular position are deeper and more marked than one would expect from the narrowness of the pelvis and the length of the pressure. This admits of explanation in the fact that the sharp prominence of the ischial spines afford a point upon which the great bulk of the expulsive force can be readily expended. It can hardly be matter for doubt that the majority, if not all of the cases of persistent occipito-posterior occur in more or less deformed pelves. The mere fact of their repeated recurrence in the same patient is of itself a strong proof of this. The invariable occurrence of the lesion over the right ischium is a point to be noted. In looking for an explanation of this several points are to be noted:—

1. Right occipito-posterior positions are more common than left.

2. The occiput bearing on the right ischial spine excites a greater pressure than the sinciput bearing on the left.

1*st*, Because the occiput is *at first* more prominent than the sinciput. I say at first, because—thanks to the valuable observation of Dr Hart[1]—the compression which the head undergoes in this position is such that the head is pressed on in its antero-posterior diameter, and thus the asymmetrical wedge shape of the head is obliterated, so that at the point of contact with the pelvis

[1] *Transactions of Edinburgh Obstetrical Society*, vol. v. part 2, p. 131.

neither end of the head has an advantage over the other, both being equally steep.

2*d*, Because the pressure of the posterior pelvic wall will act more on the occiput than the sinciput, thus tending to drive the occiput forward.

3*d*, Because the occipital arm is the shorter of the cephalic lever, and the pressure bears more directly on the force resisting it than on the force resisting the longer arm. Although, in this Society, the lever theory, as accounting for flexion of the fœtal head, has been ably combated by Professor Simpson,[1] yet the lesion we have described would seem to negative the condition assumed by Lahs[2] in his conception of the mutual relations of the girdle of contact and the fœtal head.

Results.—It must be admitted that in none of the cases I have recorded were the results to the patient serious, so far as the ultimate issue was concerned. It is none the less true that such lesions may easily become of grave import.

1. In two cases the patient suffered from retention of urine, requiring the use of the catheter. This was no doubt due to the vaginal wound, in the same way that retention is observed resulting from perinæal tears.

2. The constitutional disturbance was small, and pelvic pain not in any way marked—so much so that, on that account, such injuries are very apt to be overlooked. This is what might be expected in a localized parametritis.

3. Such lesions greatly increase the risks of septicæmia.

4. They may be the starting-point of serious and long-continued parametritis.

Two further points require notice:—

1. Did the forceps cause the injury? I think not. The history of Case IV., at all events, conclusively proves that such an injury may occur without any instrumental interference; on the contrary, I believe—

2. That the prevention of the injury is to be looked for in the early application of the forceps. If my explanation of the occurrence of this lesion is correct, then it is clearly bad practice to delay applying forceps to a partially rotated occipito-posterior head.

Why are these sinuses not recognised? *a*. Although, after a forceps case, every careful practitioner will examine the vagina, yet he will probably fail to detect the lesion, as the opening, if there is one at all, will be very small, the injury being the result of pressure, and the slough not separating for some days. *b*. Because such injuries cause but little pelvic disturbance, and the attention of the accoucheur is not attracted to the pelvis, and no vaginal examination being made, the injury remains unobserved.

To sum up—

[1] *Transactions of Edinburgh Obstetrical Society*, vol. v. p. 75.

[2] *Die Theorie der Geburt*, Bonn, 1877.

1. A partially rotated occipito-posterior position is the least common of the various forms of occipito-posterior position.
2. Such an occipito-posterior position is usually associated with a degree of minor disproportion of the pelvis.
3. A very frequent if not invariable result is the formation of a more or less deep vaginal sinus.
4. The situation of this sinus is over the right ischial spine.
5. The extent and depth of the sinus depends on the length of time that the pressure has been exerted; though a very short period of pressure is sufficient to cause a sinus.
6. These sinuses do not cause very much constitutional disturbance, and their existence is often overlooked because no vaginal examination is made.
7. The prevention of such injuries is to be found in an early use of the forceps.

Dr C. E. Underhill had listened with great interest and satisfaction to Dr Croom's graphic contribution to the pathology of childbirth. Of course all were familiar with occipito-posterior positions, but the merit of Dr Croom's paper consisted in his pointing out that they were sometimes associated with vaginal injury of a particular kind and special position. This was a new observation. The connexion between occipito-posterior positions and the ischial spines was long ago pointed out by Tyler Smith, and Dr Croom had associated misplacement of the ischial spines with this particular lesion. It was shown in the paper to occur apart from the use of the forceps. It was doubtless caused by pressure. The paper was interesting and valuable.

Dr Bruce thought the paper interesting. There were no bad effects stated as resulting from this injury; and such being the case, it was questionable whether practitioners ought to examine their patients nine days after delivery to see if such a lesion existed.

Dr W. L. Reid was deeply indebted to Dr Croom for the information contained in his paper. A fortnight ago he attended a young lady in her confinement, who had been delivered two years ago, by forceps, of a child, which only survived a few weeks. The medical man in attendance stated that the case was an occipito-posterior one, and that the pressure of the forceps had evidently killed the child. He (Dr R.) saw the case when in the second pregnancy and four or five months pregnant, and came to the conclusion that the pelvis was a small one. He accordingly advised and performed the induction of premature labour at about the eighth month. The position of the head was R.O.P., and became arrested at the brim. He applied his forceps with the perineal curve, and brought it down to the ischial spine, still in the third position. It then jerked round there into the second position, and was ultimately born alive and well.

The President had listened with great pleasure to Dr Croom's

paper. The effect on his mind was not so strong, however, as it seemed to be in Dr Underhill's case. The injury described might have been due to the mechanism and the forceps. He could get over the case of the third labour, where there was a tear, and where no instrument had been employed, by supposing there had been a cicatrix, the result of a previous instrumental labour, opening up afresh. Dr Croom had failed to convince him of the innocence of the forceps. There was a tendency to tear where the occiput lay; and further, the lesion would be more frequently noticed when due to mechanism only.

Dr Croom thanked the Society for their reception of his paper. He differed from Dr Macdonald because (1) the direction of the sinus was down and back, whereas if it had been a forceps lesion it would have been up; and (2) because his experience of the behaviour of old cicatrices was that they softened down and disappeared during pregnancy, and stretched rather than tore during parturition.

V. The *Secretary* then read Dr More's paper on the

USE OF THE CATHETER BEFORE FORCEPS-DELIVERY.

In most if not all the works on obstetric surgery, the use of the catheter before forceps-delivery is strictly enjoined. Although this precautionary measure is sometimes imperatively demanded, still we cannot help thinking that to dignify it by placing it in the position of an invariable rule—a rule never on any pretext to be infringed or broken—is little short of an anachronism.

Catheterism is thus recommended, or rather enjoined, to provide against the contingency of a distended bladder, with all its consequences.

Of this complication I think we are justified in maintaining—1st, That it is very rare indeed. 2d, When present, that it is almost invariably a consequence of protracted labour. 3d, That as forceps-delivery in the present day is recommended before labour can be said to be protracted, this complication becomes at once eliminated, and is, in short, put out of court.

The anatomical and physiological conditions of this viscus *during parturition* would of themselves render over-distention a matter of extreme rarity, and this for the following reasons:—1st, The renal secretion is for the time diminished (Parkes). 2d, The bladder space or capacity is also diminished. 3d, The inclination to urinate, and thus partially empty the bladder, is almost invariably a prominent symptom of even natural labour. Apart from these conditions, the mere facility with which bladder distention can be detected would render its hidden existence a matter of extreme improbability, and thus, of course, weaken the force of the classical rule.

When the parturient patient is unable to empty her bladder, or,

more properly speaking, to pass water, symptoms of a special kind very soon arise, which cannot fail to lead any accoucheur of experience to detect this complication. There is a peculiar accentuation of the pains of labour contraction, localized to the space above the pubis, and the distended bladder can be felt, and even seen, as a characteristic tumour. That the renal secretion is very much diminished during the act of parturition cannot for a moment be doubted. The vesical tenesmus, or constant desire to micturate, must be disassociated from the quantity passed—as a matter of fact, though the calls to urinate are frequent and often distressing, not much water is passed in a given time.

In reference to the excretion of urine Fothergill says: "There is, indeed, rather an exosmotic than a vital action going on in the Malpighian tuft, and the flow of water through the thin-walled glomeruli is almost a question of hydraulics; the greater the pressure on one side, the more rapid the flow: the lower the pressure, the slower; but if the pressure on both sides be equal, as when the flow of urine through the kidney is arrested by a calculus in the ureter, then the flow ceases, and there is a standstill of excretion."[1]

It is unnecessary to point out that during the muscular contractions of the uterus, backed up as these are by extreme abdominal tension, the pressure on both sides of the Malpighian tuft must be equal, and thus lead to arrest of urine excretion during each labour pain. As an argument in favour of the idea that during labour the excretion of urine is diminished, we might cite the researches of Ustimowitsch. He says: "The relative quantity of the several constituents of the urine varies with differences in the pressure of the blood in the vessels when it is excreted, and with the resistance that the urine meets with in its discharge by the ureters. Moreover, probably by its action on the nerves, it causes a diminution or absolute arrest of the secretion when the system is fully under its toxic influence."[2] In parenthesis, I would ask, Are not the symptoms of uræmic poisoning strangely like those rising in protracted labour from impaction?

Again, Dr Johnson, in his *Lectures on Bright's Disease*, says: "For the due performance of the secretory function (of the kidney), and for the maintenance of its nutrition, it is essential that the blood move freely through the gland. An impeded return of blood through the veins involves as a necessary consequence a partial blood-stasis, and, as a result of this, a scanty secretion of urine."[3]

Hermann performed experiments on the blood pressure as influencing the secretion of urine, and found that "it is not the diminished rapidity of the current of blood, but the diminished pressure, which causes a proportionate diminution in the secretion

[1] *The Practitioner's Handbook*, p. 389.
[2] *Year Book*, Sydenham Society, 1871-72, p. 19. [3] Page 116.

of urine; and as secretion ceases altogether when a certain minimum of pressure is attained, so also, when a certain maximum of pressure is surpassed, does the urine assume abnormal qualities."[1]

Apart from the *sustained* pressure (by the fœtus) on the renal and abdominal veins during pregnancy, the increased though intermitting pressure arising during the act of parturition must materially influence the excretion of the watery elements of the urine. The etiology of puerperal albuminuria would also seem to indicate that during the later months of pregnancy there is such pressure on the vena cava inferior, the renal and other abdominal veins, that obstruction to the returning circulation in the kidney takes place, with its consequent alteration in the quality and diminution in the quantity of the renal excretion. Dr Johnson on this point says: "In the advanced stages of pregnancy the pressure of the uterus on the veins may cause passive renal congestion and albuminuria: the urine becomes scanty in proportion to the degree of venous congestion, and the consequent tardiness of the blood-stream through the kidney."[2]

During parturition all these factors must necessarily be increased, and during protracted labour suppression is as much to be dreaded as the retention of the kidney secretion. Any cause which keeps up the vascular tension in the abdominal veins, determines progressive stagnation in the renal as well as the peripheral capillaries—this stagnation, as pointed out above, must to a certain extent equalize the blood-pressure on both sides of the Malpighian tufts, and for the time arrest secretion. Thus is partly explained the compensatory varicosity and œdemas of the limbs, the diminished excretion of the watery elements of the urine, and the occasional super-albuminosis seen during the later months of pregnancy. That mere pressure in the abdominal veins is an important factor in influencing the amount of the renal secretion during parturition may well be imagined when we take into consideration "the marked influence which a *first* pregnancy appears to have in the production of albuminuria." As Cazeaux points out, the resistance of the walls of the abdomen (in primiparæ) increases greatly the pressure sustained by the parts behind the uterus. Thus is explained, also, the rapidity with which albumen frequently disappears after labour, and also the great increase in the urinary excretion. According to Parks,[3] during the first five days after delivery both the water and urea of the urine are increased.

This sudden and great increase in the quantity of urine passed after delivery is a matter of common observation, and I have noticed that where the pressure on the abdominal veins has been more than usually great, as in twin pregnancies, and in cases where there has been an excess of the liquor amnii, the amount of

[1] *Year Book*, p. 27, 1862.
[2] *Lectures on Bright's Disease*, p. 115.
[3] *On Urine*, p. 105.

urine passed has been proportionately great. As evidence in the same direction, I may be allowed to quote Francis Ramsbotham, who, under the section "Rupture of the Bladder," says: "The kidneys, under lingering labour, rarely secrete the same quantity of urine in the same space of time as they are accustomed to do in the ordinary states of the system, because much of the fluids is carried off by perspiration, etc."[1]

That vicarious interchange of function between the skin and kidneys may exist to a certain extent, I have no doubt; but I think the evidence mostly tends to show that the diminution of the urinary secretion which undoubtedly obtains during the process of parturition is teleologically (if, in this advanced age of synthetic science, I may be allowed such an old-fashioned word) provided for in the physiological pressure on the renal and other abdominal veins.

Again, we have drawn attention to the fact that during labour the bladder-space for the storage of urine is, like the secretion itself, diminished. "The vesica urinaria," says Smellie, "in pregnant women near their full time, is often so much pressed by the uterus that it will contain but a very small quantity of water," etc.[2] This might be urged as a reason why greater care should be taken by the accoucheur to guard against urine accumulation. But if we take into consideration the manner in which the vesical capacity is diminished, we shall see that not only is bladder-distention less likely to arise under this altered shape, but, when it does arise, there is less risk of rupture to the viscus, and less chance, let me add, of the accumulation interfering with the progress of the labour.

During pregnancy, and of course during parturition, the bladder becomes flattened from before backwards. "When a retention of urine takes place in the latter months of pregnancy, as the water accumulates, the bladder cannot enlarge equally in all directions because of the resistance which it meets with posteriorly from the gravid uterus: it therefore assumes a flattened form, and spreads upwards and laterally to a great extent over the anterior part of the uterus."[3] During the progress of labour, when the expulsive efforts are in force, this flattening of the viscus is carried to such an extent that the bladder or storage space is represented by a mere slit.

No sooner does any urine distil from the compressed ureters into the bladder than it is pressed upon by the advancing fœtus and the abdominal muscles, when it is either passed involuntarily during the force of the pains, or voluntarily during the force of a frequent and urgent vesical tenesmus. Of the frequent and urgent inclination to pass water there is no need to speak, for every

[1] *Obstetric Medicine and Surgery*, p. 604.
[2] *Smellie's Midwifery*, N. Sydenham Society Edition, vol. i. p. 158.
[3] Lowder's MS. *Lectures*, as quoted by Gooch, p. 119.

accoucheur will bear me out in the assertion that it forms one of the most prominent symptoms, or, rather, accompaniments of advancing labour. Of the involuntary draining away of urine in labour, apart from pathological lesion, there is not the same decided evidence; and, of course, where the head is impacted in the pelvis and pressing on the neck of the bladder, such a thing is impossible.

Anatomically speaking, the female urethra (including its neck) is a much simpler mechanism than the same canal in the male. The neck of the female bladder is absolutely free, being loosely surrounded by cellular tissue, while that of the male is encircled or guarded, and, in a sense, throttled, by the prostate gland. Again, the opening into the male bladder is not so low down as that of the female: indeed, the urethra pierces the female bladder in its most dependent part. It follows from this arrangement that pressure, as of the fœtus, will tend to keep the bladder more or less empty. Did the urethra enter the bladder in any other situation than its most dependent part, pressure, instead of emptying the viscus, might burst it.

Again, we know that the female bladder, like other sphincter-guarded cavities, is more or less richly supplied by ganglia, which provide for the voluntary custody of its contents. Pressure, we know, will numb, and, in time, partially paralyze these ganglia; thus the pressure of the fœtal head on the nerves supplied to the vesical sphincter will provide for the physiological paresis of this muscle and the consequent draining away of the urine. In short, pressure does here much the same as division of the cord.

Having thus far seen that distention of the bladder during parturition is a complication presumably not likely to arise, it may be instructive to inquire what real justification there is for this classical enforcement of the rule of catheterism. Setting aside certain well-defined instances where bladder distention does arise, the history of forceps-delivery would seem to indicate that it is only in protracted or tedious, and, let me add, neglected labour, where large and dangerous accumulations of urine take place. In the reign of terror, the era of expectancy, when the forceps was used only as a *dernier ressort*, we often meet with this complication mentioned as existing. Typical of this era, let me examine the classical experience of Robert Lee. In his *Clinical Midwifery*,[1] portraying the histories of four hundred cases of difficult labour, the catheter is mentioned as having been necessary in six or eight cases. There is no evidence to show whether the catheter was used before every forceps case, and in eight only is this prodromous operation mentioned. Bringing our point to the front, here they are:—

Case 32. Patient three full days in strong labour. Bladder filled with urine. Catheterism.

[1] Churchill, 1842.

Case 45. Two and a half days in labour. Catheter required. Inflammation and sloughing of vagina followed.

Case 62. First labour, seventy-two hours' duration. Retention of urine. Head compressed in the brim. Great inflammation and sloughing. Died.

Case 63. First labour, liq. amnii discharged six days. Pains strong and regular during twenty-four hours. Head fixed in the brim. Bladder distended. Catheter cannot be passed. Patient recovered.

Case 84. Three days in labour. Bladder filled with urine. The head greatly swelled and compressed, firmly fixed in the brim. Sloughing of vagina and a fistulous communication between it and the bladder.

Case 93. A case of very tedious labour. Bladder enormously distended. Head had been long wedged in the brim, and the soft parts hot and swollen. Catheter could not be passed into the bladder till the volume of the head was lessened. Died of inflammation of the bladder.

Case 95. Patient forty-eight hours in labour. Retention of urine, and great swelling of vagina and head of child. Catheter passed, not into bladder, but into uterus.

Case 96. First labour, three days and nights' duration. Retention of urine. Head firmly impacted in the brim, and swollen. Sloughing and vesico-vaginal fistula.

Case 106. Protracted labour. Retention. Catheter could not be passed.

These were not all forceps cases, but they forcibly illustrate two things—the rarity of distended bladder, and its association with protracted labour.

As belonging to the same expectant era, I have gone over the forceps deliveries occurring in the Dublin Lying-in Hospital during the period of seven years commencing November 1847. The general features are much the same as in Dr Lee's cases, and are as follows:—

No. 36. Forty-six hours in labour. Bladder enormously distended with urine. Relieved by the catheter.

No. 41. Forty-two hours in labour. Bladder enormously distended. Two quarts of urine drawn off by the catheter.

No. 131. Twenty-two hours in labour. The bladder full, and evacuated by catheter.

Looking at our subject from the historical point of view, we notice—1. That catheterism before forceps-delivery is very seldom mentioned as part of the treatment. 2. Very few cases of injury to the bladder are recorded as resulting from non-catheterism. 3. When catheterism is mentioned as necessary, or rather as having been employed, it is always in cases of protracted labour. This being so, we are driven to one of two conclusions: either that the catheter was used in every case of forceps-delivery, but only (for some in-

explicable reason) mentioned in connexion with these cases of protracted labour, or that the catheter was used only in cases of protracted labour, and where there were evident symptoms of distended bladder.

Whichever view is taken, it is equally antagonistic to the rule of prodromous catheterism in forceps-delivery. Because, if the catheter was used in each and every case, it was only in the cases mentioned where there turned out to be any justification for its employment. In other words, it was only in such cases that distention was relieved, because it was only in such cases where this complication was found. And, of course, if the catheter was used only in the cases mentioned, then I hold it was used legitimately, and only as it ought to be—*i.e.*, where there is distended bladder. Plainly, these histories teach us that distention of the bladder during parturition is not of very common occurrence, and when it does crop up, it is only in the presence of a terribly protracted labour.

Again, it may be urged that as catheterism has always, and by every one, been considered an essential part of forceps-delivery, it would not be thought necessary to note its use. But why note the cases in which it had been used, except to accentuate the fact that a distended bladder had been found? Every one must regulate his mode of practice according to the principles which form the basis of his knowledge. Thus, if a man dreads the use of the forceps, in other words, is "an expectant," by all means let him use the catheter before every forceps case, for undoubtedly he will use forceps in a large proportion of cases of protracted labour. On the other hand, if he goes on the principle of shortening the duration of labour, as soon as that is possible and consistent with the mother's and child's safety, then he will find that catheterism is unnecessary, for the complication for which this is required is eliminated from his practice. If catheterism is necessary before forceps-delivery (looking at the latter in the light of advanced obstetrics), then must it be equally necessary before every labour.

A rule cannot be said to be founded on a scientific basis where its infringement leads to no untoward results, or where there is no compensation to the operator for the trouble of operating, or to the patient for submitting to the disagreeable necessity of its performance. It may seem heterodoxy to ignore or call in question a rule of treatment the main object of which is the enhanced safety to the patient during operation. But an operation like forceps-delivery, in itself safe and easy of accomplishment, may be rendered unnecessarily cumbersome to the surgeon and disagreeable to the patient by the addition of doubtful and disagreeable details.

If, then, there are doubts as to the necessity of catheterism; if this prodromous operation is dreaded and disliked by the patient, and in this dread and dislike becomes a bar (on the patient's part)

to the more important operation of forceps-delivery; if this apparently uncalled for operation is one of difficulty (and it very often is, when it is most required) and uncertainty to the operator, and in this difficulty and uncertainty becomes a bar to the recommendation and use of the forceps where they are undoubtedly called for, then I maintain that in any or all of these counts catheterism should not be enforced as an invariable adjunct to the simple operation of instrumental delivery.

Everything which has a tendency to handicap an operation, either in its moral or in its surgical aspects, should be avoided. Undoubtedly it is a troublesome, and sometimes a difficult thing, to pass a catheter when the head is impinging on an elongated urethra. It is undoubtedly, also, a disagreeable operation to the patient, and often involves exposure of the parts for its easy accomplishment. Natural delicacy will often lead the patient to dread and avoid this proceeding; and if it is to be a *sine qua non* of forceps-delivery, the latter will be, as a consequence, dreaded and objected to, to the danger of patient and offspring.

Any accoucheur in extensive practice, either in town or country, will, of course, come across cases of tedious and protracted labour. Knowing that certain complications are likely to arise from this very protraction, it becomes his duty to provide for these. One of the most prominent, and, I had almost said, the most serious complication, is, without question, urine accumulation. We have shown that this complication is relatively rare, but we do not mean to assert that it never does arise, or that it need not be eagerly watched for.

When called to a case which has been for some time in the hands of a midwife, or a case which from any cause comes under the class of lingering or protracted labour, one of the first things I consider as necessary to be done is to inquire into the state of the bladder. If, on examination, I find that my patient has been passing water,—that she has, in short, the usual, and, I might say, the physiological vesical tenesmus, and that there is no physical evidence of distention of the bladder,—I proceed with the delivery (instrumental, if required), feeling comfortable and satisfied that no bar to the safe instrumental delivery exists. Out of over two hundred forceps-deliveries, I have not yet been obliged to use the catheter, either before or after labour, in more than four cases. Nor can I recall to my remembrance one single instance where my patients have suffered, either in the bladder or otherwise, from this course of treatment. Nor can I look upon my experience in this respect as coming under the category of coincidence or luck, for, on questioning any of my immediate confrères, I find that the use of the catheter before forceps is quite the exception, and not the rule.

In further justification of this line of practice, I may mention that Dr Hamilton of Falkirk, who, in a certain sense, may be

looked upon as a representative man in this department of obstetric surgery, made the following statement before the Obstetrical Society of Edinburgh in November 1878. As it may have a certain historical interest, I give the quotation as it appears in the abstract of the Society's proceedings: "In answer to a question put by a member as to the effect this mode of delivery had upon the bladder, Dr Hamilton stated that neither before nor after delivery had he had occasion to use the catheter for thirty years. The first, evidently, because he never allowed time for the head unduly to press on the neck of the bladder; the second, because his instrument never injured the parts of the mother."

The evidence of Dr Hamilton in this respect is peculiarly valuable; for not only is it the experience of a long series of years, but his very method of operating would bring to the front any latent danger there might be in using forceps without first emptying the bladder of its contents. In applying his instrument, he does not take the oblique grasp of the head, but, using straight forceps, he seizes the head in its lateral aspects and turns "the flat side of the forceps round the pubis." He thus applies the instrument in the antero-posterior diameter, and it is needless to add, that in this grasp the bladder and urethra would be more easily injured than when they are applied laterally in reference to the pelvis. But for thirty years he has not had occasion to use the catheter for distention of the bladder, and the explanation of this apparent anomaly is simply because he uses them in the ratio of one in seven or eight cases, and, of course, before anything like protracted labour (with its consequent complication) can take place.

Cathetérism is recommended, and is indeed obligatory, in circumstances which should not be allowed to arise. The early and more frequent use of the forceps will undoubtedly in time eliminate this rule from the code of obstetric practice. A labour that is not advancing at a physiological rate has for one of its earliest and most prominent symptoms an increase in vesical tenesmus. That vesical tenesmus exists as a prominent symptom during the progress of tedious labour cannot be denied; that this inclination to urinate will be very much increased, and in time arrested, in cases of protracted labour, can also be very well imagined. The impacted head comes in the first place to press on the neck of the bladder: urination is now hindered or arrested, and distention to a greater or less extent takes place; the distended bladder rises as a large flattened tumour above the pubis, quite apparent, be it remarked, to the sense of touch, and even of sight. This floating upwards of the balloon-like swelling puts the urethra on the stretch, and if impaction is allowed to go on we have those cases ending in vesico-vaginal fistula. This accident, I am glad to say, I have never yet met with, for the simple reason that the conditions under which this grave complication is only possible are not

allowed to formulate themselves. Even the midwives and amateur nurses in my neighbourhood know well from experience that delay to delivery will not be tolerated beyond a certain time, so they generally advise the doctor being sent for.

In reference to this most deplorable of all bladder injuries, Dr West makes these pertinent remarks:—"There can be no doubt that this accident is due to the delay of instrumental interference in tedious labours, coupled with the omission to use the catheter."[1] But I hold that the use of the catheter can only be entertained where the use of the forceps has been too long delayed, and that where forceps are used as they ought to be the necessity for the latter will seldom arise.

Why allow our patients to drift into a state where such a disagreeable operation is required? Operate in time; apply the forceps before the labour becomes tedious, and before the bladder becomes distended, and we do away with the necessity for the catheter. I do not deny that distention of the bladder may exist even as an initial symptom in ordinary labour. Thus Dr West says "that acute cystitis is far from being a rare sequela of any of the more active forms of abdominal inflammation, in women of all ages and in all circumstances."[2] With a bladder in a state of either chronic or acute cystitis we can well imagine distention taking place, and that without any undue pressure either on the viscus itself or on the urethra. But these cases are not by any means common, and when they do arise they are sufficiently well marked, and do not need prodromous catheterism to detect them.

And again, it is urged that neglect of catheterism may lead to serious bladder disturbance after labour. Dr West says, "Many of the cases of cystitis after delivery are traceable to neglect of the very obvious precaution of introducing the catheter when labour is at all protracted, or whenever the pressure on the neck of the bladder has been so considerable as to render micturition for a day or two painful or difficult." If this quotation proves anything, it certainly proves that cystitis of a painful kind may arise in protracted labour, or in cases where the pressure on the neck of the bladder has been so considerable as to render micturition painful. I would again reiterate the principle that the forceps should anticipate the states in which this complication can arise.

Though objecting to the use of the catheter before forceps-delivery as being a necessity, I am at one with those accoucheurs who hold that the bladder should have a careful and intelligent attention in all cases, whether of natural, tedious, or complicated labour. And this attention, I think, is more than ever necessary in all cases of cross-presentation. Though easily detected in head presentation, one can easily imagine how it may not be so manifest in cross-presentation. Here the bladder might have

[1] *On the Diseases of Women*, p. 608.
[2] *Ibid.*, p. 604.

room for great distention, and that without showing its characteristic tumour above the pubis. We should see, therefore, by catheterism or otherwise, that there is no large accumulation of urine before proceeding to operate in these presentations. A distended bladder would, of course, impede the operation of bipolar version, and, in the old method of turning, might lead to bursting of the viscus.

In conclusion. A rough analysis of the above remarks brings prominently forward the following ideas:—1. Distention of the bladder, as a complication of ordinary labour, is very rare. 2. Clinical evidence would seem to indicate that it is rare even in tedious labours. 3. When present it is generally as a symptom or complication of greatly protracted labour. 4. The more frequent and early use of the forceps, by eliminating this complication, does away with the necessity of prodromous catheterism. 5. Distention of the bladder, from its symptoms and physical signs, is readily enough detected without the surgeon being obliged to resort to the disagreeable operation of catheterism. 6. Catheterism should be used intelligently, and not empirically, *i.e.*, according to the nature of the individual case, and only where there is accumulation of urine. 7. This operation, being one of difficulty without exposure, and thus running counter to the feelings of delicacy of the patient, becomes a bar to the legitimate and early use of the forceps. 8. The early use of the forceps, eliminating as it does most, if not all, the more important complications of parturition, should not be unnecessarily handicapped by disagreeable and questionable details.

The conditions in which I would consider it necessary to attend specially (by catheter) to the state of the bladder are as follows:—1. The fact of the parturient patient not having passed water for some time. 2. The existence of a supra-pubic tumour other than the fœtus. 3. Extreme pain during contraction of a character disproportionate to the expulsive efforts. 4. The sudden cessation of the uterine pains. 5. Protracted labour with or without impaction of the head. 6. The presence of vaginal cystocele. This before delivery.

The conditions after delivery calling for special vigilance would be:—1. The patient not having passed water at least ten or twelve hours after labour. 2. Her inability of doing so. 3. The uterine tumour being too high in abdomen. 4. Pain over pubis not due to after-pains.

The President had listened with interest to Dr More's paper, and thought there was a good deal of truth in his statements. Although saying so much, and allowing for all the reasons given, he yet thought Dr More immensely overestimated the difficulty of passing the catheter. They exposed a patient to pass the forceps, and why not to pass the catheter. The routine use of the catheter

before forceps was, however, probably unnecessary. He himself sometimes forgot to do it, and had never noted any harm by the omission. Dr More's paper contained new and original ideas, and had been listened to with great pleasure by the Society.

Dr Hart had listened with great pleasure to Dr More's original paper. He had always taught that the catheter should be passed previous to every forceps application. What he had learned from Dr More's paper was, that in some cases it was unnecessary. He hoped they would have further communications from Dr More on this and other subjects.

Dr Elder thought it better to pass the catheter before forceps application. At the same time, he often forgot to do it.

MEETING X.—APRIL 27, 1881.

DR ANGUS MACDONALD, *President, in the Chair.*

I. *Dr Wm. Turner, Glasgow*, showed a FŒTUS delivered in connexion with the out-door department of the Glasgow Maternity Hospital. It was brought to him by the student who was called to attend the case, and who was present at its birth. From him he ascertained that the mother was a fairly healthy woman, aged 22, and in her second pregnancy. Her former child, 3 years old, is healthy. Labour began at 7 P.M. on the evening of 16th April, and ended at 2 A.M. 17th April—*i.e.*, it lasted 7 hours. Child presented hand and foot. Version was performed by the district accoucheur, and the head was extracted with difficulty—(second stage of labour lasted 1½ hours). The child was born alive, but lived only a few seconds.

II. *The President* showed a SUBSEROUS FIBROID removed on post-mortem from the uterus of an old woman who had suffered from general malignant disease.

III. *Dr Wm. Turner, Glasgow*, then read his paper on a case of

DELIVERY BY THE BREECH THROUGH A GREATLY NARROWED, FLAT, RACHITIC PELVIS.

CASES have been from time to time recorded where a fœtus at full term has survived its transit through a pelvis narrowed in its conjugate diameter beyond the limits that are ordinarily recognised for the safe delivery of a mature child, but such instances are, for the most part, too ill-authenticated to be readily accepted as true, and too rare to lead to any alteration in current rules of practice.[1]

[1] In searching the records for information regarding such cases, the following were the most noteworthy examples that I met with :—

Lachapelle (*Pratique des Accouchements*, Paris, 1825, eleventh memoir, p.

Bearing in mind the conclusions arrived at by Sir J. Simpson, so strongly advocated by him in his teaching, and so fully discussed in his well-known series of papers "On Turning as an Alternative for Craniotomy and the Long Forceps in Deformity of the Brim of the Pelvis," forceps would appear to one to be, in the minds of the younger practitioners at least, too exclusively the favourite operation in tedious head-first labours, whatever the cause of obstruction may be.

The following case, I trust, will be of interest to the Fellows of this Society as bearing out Simpson's views, and as demonstrating more satisfactorily, perhaps, than has often hitherto been done the extreme degree of pelvic contraction which is compatible with the safe passage of a well-developed child:—

M. C., a primipara, about 30 years of age, and unmarried, was admitted to the Glasgow Maternity Hospital on 20th February at 10 P.M. The patient stated that she was at the full term of her pregnancy. It was ascertained that she was a native of Enniskillin, and that she had crossed from Ireland to Glasgow two days previously, accompanied by her avowed future husband, who had come to Scotland in search of employment. On landing she had been deserted by him, and had remained in a destitute condition until she found refuge in our hospital. (These facts I have mentioned as bearing on the subsequent history of the case.)

On admission the patient appeared to be well nourished and of healthy constitution. She was 5 ft. 4 in. in height, and had well-formed limbs and chest. Nothing in her features or gait indicated the presence of the rachitic diathesis. The expression of her face was vacant, and she either did not understand, or did not care to answer, the simplest questions until they had been several times repeated, and her answers were such as to give little information. In short, she presented symptoms very much akin to those of dementia in a mild form.

The patient having been placed on a delivery-bed (she had already been in labour for about five hours), I proceeded to make examination of her abdomen. On inspection the uterine tumour was noted to be somewhat unusually prominent; its contractions were

429) relates a case where she delivered a child through a conjugate 2·75 French inches. Forceps had slipped, version had been performed, and the head extracted suddenly. A large girl was born alive, but did not live long. (French inch = $1\frac{1}{8}$ English inches.)

Danyan (*Journal de Chirurgie*, par Malgaigne, Janvier 1843) gives an account of a woman whose pelvis was found after death to measure 2·75 French inches. Of nine children which she bore one was said to have been delivered alive, and it presented the breech. All the others were born dead.

In a case described by Simpson (*Select Obstet. Works*, p. 394), and which appears more than any other to have given origin to his ideas on this subject, he delivered by version a child whose head was deeply indented. The bitemporal diameter of the head at the seat of indentation was carefully measured, and was found, when held compressed by the fingers, to be not more than $2\frac{1}{2}$ in. The child gasped several times, but full respiration could not be established.

of average duration and of more than ordinary strength. By external palpation limbs were felt in the left groin, but no head lay in the inlet to the pelvis. The fœtal heart beat at 142 per minute, and was best heard on the right side a little below the level of the umbilicus. On examination per vaginam, the margin of the outer os was found as large as a florin, soft and dilatable. The sharply defined heel of the left foot was easily recognised, dipping into a shallow bag of membranes. Very pronounced bulging of the bodies of the upper sacral vertebræ was noted, and I had forceps then brought to hand in anticipation of difficulty with the aftercoming head. No actual measurement of the pelvis, however, was made.

In half an hour the os was felt to be fully half dilated. The membranes were ruptured during that examination, although great care was taken to avoid such accident, and the left foot descended into the vagina. By its side, also, a protruding loop of cord was felt. It pulsated at the rate of 78 per minute, but the number increased as the uterus relaxed (the pulsations of the fœtal heart, ascertained at different parts of the labour, varied from 60 to 142 per minute). An attempt was made to replace the cord in the uterus, and to retain it there by drawing down the thigh to occupy the lower strait of the uterine cavity, but it failed chiefly on account of the length of cord prolapsed. The thigh was therefore left to dilate the cervix as far as possible, and no further interference was made for half an hour, except to feel the pulsations of the cord.

The os having now become almost fully dilated, and the right foot being easily accessible, the latter was seized and brought to the vulva beside its neighbour. Chloroform was then administered, and the urine was drawn off by catheter. The patient lay midway between the back and left side positions, with the right thigh raised, and both knees flexed towards the abdomen. A single strong pain, aided by slight traction, sufficed to expel the child's body from the uterus. Both arms were found extended above the head, and the head itself was in the position of extension, so that it was needless to persevere in attempts at extraction until these conditions should have been remedied. The pulsations of the cord were 60 per minute, giving indication for rapid completion of delivery. The arms were with difficulty reached and brought down, but still the head would not yield to the combined force of traction and pressure exerted from the abdomen. The chin was found high up on the right side, and without using much force it was brought down into such a position that the head now lay directly in the transverse diameter of the pelvis, neither extended nor flexed on the trunk. It resisted further attempt at flexion.

I now enveloped the child's body in a towel, to prevent my hands from slipping, and allow of more effectual traction. The body was grasped by the right hand in the region of the loins,

while the left hand laid hold on the shoulders. Pressure on the abdomen was maintained constantly during the pains by a trained nurse whom I had previously instructed as to how it should be applied; while continuous strong traction was also at such times kept up, with the child's body now drawn backwards on the perineum, now pulled forwards towards the pubis. No lateral traction was employed. On the last occasion, after less than four minutes' continuous application of this taxis, the head yielded somewhat suddenly. Forward rotation of the occiput took place abruptly, and delivery of the head was easily and speedily completed. Artificial respiration was needed to supplement weak spasmodic inspiration of the child, who cried for the first time 7 minutes after its birth.

The after-birth was soon afterwards expelled entire. A straight tear half an inch in depth was found to have taken place in the left side of the cervix, which allowed the anterior lip to hang very loosely into the vagina, but no other injury to the mother's parts was found. Thus the labour was completed $6\frac{1}{2}$ hours after its onset, $1\frac{1}{2}$ hours after admission, and 10 minutes after the head engaged in the brim.

Half an hour after delivery the mother had fallen into a sound sleep, from which she did not awake for several hours. The child was a female, 19 inches long, and weighed $6\frac{3}{4}$ lbs. It had all the appearances of a fœtus at full term. The bones of the head were well ossified and of normal rigidity. The head was somewhat elongated, and there was a reddened contused band on the scalp of the right side, extending from near the root of the zygoma upwards over the right parietal bone towards the greater fontanelle. There was nothing amounting to a depression, but the head was generally flattened on that side. A red line round the left side of the head indicated the level where it had been constricted previous to its yielding at the brim of the pubis. This line passed from the upper margin of the left orbit across the root of the zygoma, and compressed the left ear about $\frac{1}{4}$ inch from its summit. There was no abrasion of the skin on any part of the head.

I regret that as my callipers was broken at the time no accurate measurements of the child's head were made immediately after birth; but the following are the measurements of the head taken twelve hours after birth, when the bones of the head had regained their natural conformation.

Diameters.	Occip.-front.,	$4\frac{5}{8}$ inches.
	Biparietal,	$3\frac{3}{4}$ „
	Bitemporal,	$3\frac{1}{4}$ „
	Bimastoid,	$3\frac{1}{8}$ „
	Suboccip.-breg.,	$3\frac{7}{8}$ „
	Occip.-ment.,	$5\frac{1}{2}$ „
Circumferences.	Occip.-front.,	$13\frac{1}{2}$ „
	Subocc.-breg.,	12 „

On the morning of the second day the upper right eyelid of the child was found to have become quite black. The discoloration was mostly on the inner half of the eyelid, and was accompanied by little swelling. It went through the ordinary stages of a black eye.

I shall not occupy your time by giving details of the subsequent history of the mother, but merely mention one or two prominent points to enable you to form some connected idea of the circumstances of her death, which occurred on the eighth day after delivery.

Nine hours after delivery the patient felt herself comfortable; her temperature and pulse were normal. For the first two days she suckled her child, but the quantity of milk in the breasts was very small. By degrees the temperature had reached 103° on the morning of the fourth day, and then for the first time the lochia were fœtid. There had been no rigor. The bowels were well moved with oil, and the vagina was washed out every four hours with 1–60 carbolic solution, but no fall of temperature resulted.

On the fifth day the fœtor persisted, and the strength of carbolic solution injected was increased to 1–40. So offensive was the odour that the vagina and cervix were explored to ascertain whether there might not be some sloughing of their tissues, but no such condition was discovered. The cervix was found contracted so as to admit but one finger with ease; and it had a fissure about ¼ inch deep in its left side. The uterus extended to within an inch of the umbilicus, and could be moved without causing pain.

In the evening of the fifth day the patient vomited some dark coffee-ground material. The abdomen had become more distended, but was still free from tenderness. The lochia, which were not entirely suppressed, had a highly offensive, gangrenous odour. Opium was given freely, and a blister was applied to the lower part of the abdomen.

On the sixth day, in the morning, vomiting recurred, and tympanitis had increased. The patient was removed to the isolation ward, and had 10 grs. of sulpho-carbolate of soda given her every four hours. Opium had to be used with caution, as she seemed unusually susceptible to its influence. Pain on making water was complained of, and the bladder was emptied with difficulty. About 40 oz. of urine were drawn off by catheter.

In spite of careful nursing and liberal nourishment the pulse had steadily fallen off in strength, until on the sixth day the administration of stimulants was considered necessary. Delirium also had supervened, and hiccough was a troublesome symptom. The patient, indeed, seemed to be entirely devoid of rallying power, and died exhausted on the 8th day.

The following is a record of the temperature and pulse taken during the puerperium :—

	Temp.			*Pulse.*		
Feb. 20th	Morn.	—	Even. 98·4	Morn.	—	Even. 72
„ 21st	„	98·4	„ 100·2	„ 80	„	„ 86
„ 22d	„	99·4	„ 102·2	„ 102	„	„ 118
„ 23d	„	103	„ 103·4	„ 108	„	„ 136
„ 24th	„	103·2	„ 104·6	„ 128	„	„ 130
„ 25th	„	102·6	„ 98·6	„ 124	„	„ 90
„ 26th	„	100·8	„ 98·8	„ 126	„	„ 124
„ 27th	„	100				

The post-mortem examination was conducted by Dr Foulis twenty-six hours after death, and the following is his report:—

External Appearances.—The body is well nourished. The interior of the vulva has a somewhat gangrenous aspect, with brown fluid escaping from it. On opening the belly there is observed a small quantity of purulent fluid lying amid the coils of the intestine around the uterus; and there is some lymph adhering to these coils and to the surface of the uterus and broad ligaments. The uterus is large and soft, reaching half way to the umbilicus. After removal of the pelvic organs, the length of the body of the uterus is found to be 4½ inches, its breadth 4 inches. On opening into the uterus by longitudinal incision, its walls are found to be flaccid. The thickness of the posterior wall is ¾ inch at its middle part. The lining of the uterus is soft and irregular, covered with more or less of grayish sloughing material. At the upper part of the right side of the anterior wall there is a large spongy-looking layer ¼ inch thick, beneath which the uterine wall is honeycombed with open veins. The cervix is about 1½ inches in length and 2 in. in breadth when slit up and unfolded. The inner os is marked off from the lining of the uterus by a distinct transverse line somewhat raised and injected. The outer os presents a notch ¼ inch deep on the left side, and a still smaller one on the right side. The lining of the vagina is rugose, and of a dark slate colour, mottled with yellow. It feels rough and hard to the finger. The right ovary has been the seat of punctiform hæmorrhage, and is coated with lymph. The left ovary, on being cut into, exhibits an injected interior in which there is a yellow, solid, irregular deposit. The bladder is in places injected, especially at the base, where there are punctiform hæmorrhages in the submucous tissue, and where also there is a patch as large as a halfpenny, of a dark red colour, coated with a thin gray slough. The spleen is large, soft, almost pulpy, dark maroon in colour. The kidneys are pale, their cortex slightly thickened, and on their surface are a few radiating venous radicles. The right kidney is smaller than the left. The other organs, so far as examined, showed nothing abnormal. Being interested in the pelvis, I had it removed in the manner described to us by Dr Hart, without disfiguring the surface of the body more than is done by the

ordinary mesial post-mortem incision. I am thus enabled to submit the specimen in the fresh state for your inspection.

It is an example of the simple flat rachitic variety of pelvis. The brim might be well described as reniform or bluntly heart-shaped, the prominence of the sacro-vertebral angle appearing to be the main element in its deformity.

The measurements are as follows:—

Internal Diameters.

At the Brim.		At the Outlet.	
Conjugate,[1]	$2\frac{3}{4}$ in.	Conjugate,	$4\frac{1}{4}$ in.
Transverse,	5 in.	Transverse,	$5\frac{1}{4}$ in.
Oblique,	$4\frac{1}{2}$ in.		

External Distances.

Between ant. sup. il. sp.,	$10\frac{5}{8}$ in.
Between iliac crests,	11 in.

The cavity of the pelvis is capacious, and is much wider from side to side than antero-posteriorly. The coccyx points rather abruptly forwards, owing to a sharp bending which had taken place chiefly at the point of union of the 3d and 4th sacral vertebræ. The ischial tuberosities are markedly bent outwards; the subpubic angle measures about 100°.

With regard to the mechanism of delivery in such cases a few additional remarks might be made. And, in the first place, it should be clearly understood that these remarks are intended to apply only to the flat form of contracted pelvis as in contrast with the uniformly contracted pelvis, the mechanism and treatment in which are entirely alien to the subject of the present contribution.

Continuous traction on the body of the child for a period of four minutes was kept up, at one time in the axis of the brim, at another in the axis of the outlet. More time, however, was devoted to traction in the axis of the brim. The head was thus made to advance in the one direction with the left parietal bone rotating round the promontory of the sacrum as centre, in the other with the right parietal rotating round the pubis as centre, the abdominal pressure serving to retain the advantage gained by each of these movements. The mechanism might be compared to the working of the appliance known as the weighing winch of a ship, or, more familiarly, to that of the chain ecraseur. The effect of traction, however, is not uniform on the two sides of the head. In front the head lies against the smooth flat inner aspect of the pubic bones, while behind it is in contact with a sharply projecting angle which would tend to indent it and prevent its recession.

[1] From the promontory of the sacrum to a point on the brim, half an inch to either side of the middle line of the pubis, the measurement is $2\frac{5}{8}$ in., owing to a furrow at the point of articulation of the pubic bones.

For this reason abdominal pressure will be most advantageous if applied to the anterior side of the head, and directed at first in the axis of the inlet. As the head advances through the brim and is doubling over the promontory, the pressure should be gradually altered to a direction perpendicular to the axis of the body, so as to take advantage of the unusually abrupt recession of the sacrum. To facilitate this taxis, and at the same time allow of traction being carried out in the desired directions, the best position to place the patient in would be the lithotomy decubitus, with the thighs brought to the edge of the bed. The assistant, standing or kneeling over the patient and facing the operator, will be less likely to injure the bladder by applying the palms of his hands from either groin, one on the forehead, the other on the occiput of the child. Moderate pressure, if well directed, will probably prove as effectual as powerful propulsion. Abdominal pressure, in a very limited degree, may also be exercised alternately on the fore and hind part of the child's head, but no attempt need be made to produce the same effect by traction.

As to the advantages or disadvantages of this mode of delivery, it is evident that, had the child presented its head in the case described, instead of a lower extremity, its birth would have been at all events greatly delayed. The head would have rolled from side to side of the pelvic brim in vain attempts to enter it, and thus a more accurate conception of the amount and nature of the deformity of the pelvis would have forced itself on my mind, leading to an internal measurement of the conjugate diameter. Having ascertained that the conjugate of the brim was contracted to about $2\frac{3}{4}$ inches, and that a normally developed head was presenting, a consultation would have been called. Then, either the child would have been forthwith consigned to craniotomy,[1] or the choice would have lain between forceps and version.

The teaching of the present time in regard to the comparative merits of these two operations, forceps and version, in flat pelves, is still far from uniform in different schools. Many authorities advise that, as a general rule, the practitioner should be guided in his choice chiefly by the relative amount of his experience and dexterity in each. Some hold that the forceps operation involves less risk to both mother and child, at least in the lesser degrees of conjugate contraction. Others, again, admit that, *cæteris paribus*,

[1] Barnes maintains that although an unusually compressible head may be drawn (after version) through a pelvis with 3 in. conjugate, the chances of the child being born alive under such circumstances must necessarily be small, and that $3\frac{1}{4}$ in. must be the limit of the operation. Playfair believes that when the antero-posterior diameter of the brim measures 3 in. or less, the destruction of the child is inevitable, unless the pelvis be so small as to necessitate Cæsarean section. Leishman affirms that when the conjugate diameter is less than 3 in., to attempt to turn would be to subject the woman to needless risk, while we may be confident that nothing but failure could attend our efforts.

version offers a better prospect of saving the child without increasing the danger to the mother, at least in the more extreme degrees of pelvic contraction. There is as yet no generally established belief that version is applicable to a lower range of contraction than forceps is, *i.e.*, that a child may be made to pass alive by version through a pelvis that would not permit of its safe delivery by forceps.

The case above described must, I think, be looked upon as lending support to such belief. If a still-born child could be procured with a head of similar dimensions to the one which passed safely, vertex last, through the pelvis before you, it would be interesting to know whether such a head could be drawn, vertex first, by forceps through the brim of the same pelvis. Such experiment would not, of course, be free from fallacies. Any advantage, such as the greater compressibility of the head of a dead child, and the absence of the soft structures of the pelvis, would be in favour of the success of forceps. But the question has been already abundantly answered in the writings of Simpson, Schrœder, Braxton Hicks, Goodell, Taylor of New York, and many others, where instances are recorded of version having been resorted to with success after forceps had failed. Against such evidence several possible arguments might be adduced by those holding opposite opinions, namely, first, that in these cases the forceps had not been sufficiently or fairly tried, of which there is no evidence; and, secondly, that with the present improved forms of axis-traction forceps no such failures should occur. I know of no instance where version has been resorted to, with or without success, after an axis-traction forceps had failed;[1] but obviously some time must elapse before such an objection is valid. Further, it might be said in support of the advantages of forceps, that they have been applied to the aftercoming head to complete a case of version which would otherwise have failed. There is reason, however, to believe that the taxis employed, as in the case described, gives one as much command over the completion of delivery as does traction by the forceps. The amount of tractive force that can be exerted on a child's head by forceps applied to it has been estimated at 80 to 100 lbs. The amount of strain that can be put on the neck of a child by traction on its body, without yielding of the spinal column, has been estimated at, on an average, over 100 lbs.,[2] provided traction be uniform and exerted in the proper direction; while decapitation was found to take place when the weight was increased to 120 lbs. The amount of force that can be applied to the expulsion of the child by pressure on the abdomen has been

[1] In Prof. Simpson's paper on "Axis-Traction Forceps," a case is mentioned where his forceps succeeded in effecting delivery, and where in a former labour version had failed, and craniotomy had been performed.

[2] Duncan's experiments, *Mechanism of Natural and Morbid Parturition*, p. 140.

described as comparable with the weight of the body of the operator. The combined force of traction and propulsion that has been exerted without injury to either mother or child has been estimated by Goodell at not less than 200 lbs. Such extreme propulsive force appears to be unnecessary in order to obtain the maximum advantage of the method, and to tend even to delay the passage of the head, as will be afterwards pointed out.

But there are other and more important reasons for rejecting the aid of forceps, whether head or breech present.

If forceps be applied in flat pelves to the head coming last, the mechanism will be but slightly modified from that described most clearly by Goodell as occurring in the head-first application. The blades must grasp the head in either (*a*) its antero-posterior diameter, (*b*) its transverse diameter, or (*c*) its oblique diameter.

(*a.*) If the grasp is antero-posterior, the head is compressed in that direction at the expense of widening of its transverse diameters, however much elongation of the head is produced. It has also been stated that this grasp necessitates flexion of the chin on the sternum, whereby the biparietal diameter, instead of the shorter bitemporal, has to engage the conjugate of the pelvis. (This movement, however, need not necessarily take place, at least in head-last cases.)

(*b.*) The biparietal grasp of the head is theoretically more advantageous, for the head is there made to assume an hour-glass constriction at the very part where constriction is needed ; but, in addition to other practical difficulties, the most obvious one is that, even supposing the instrument to be applied directly in the pelvic axis, no ordinary forceps, though quite closed, could pass such a diameter.

(*c.*) If the head is seized in the oblique diameter, premature forward rotation of the occiput is thereby induced. The temple adjacent to the sacral promontory is apt to be "stove in," being caught between the promontory and the blade applied to the opposite temple, and hence the indentation which is familiar to most practitioners.

In children delivered by version, indentations must be less frequent, of less depth, and placed farther back on the head, as a rule, than when forceps have been used. The absence of indentation in the present case might be accounted for by the theory that probably sufficient time was not given for its development, as is usual in forceps cases of the same kind. The promontory, also, as is seen in the specimen, is well rounded transversely, not knuckle-shaped, as is frequently the case in flat pelves.[1] When it is considered that many (50 per cent., as stated by Schrœder) of the children whose heads have been so indented die either immediately

[1] Sir J. Simpson mentions a case where he delivered by turning a full-grown child through a flat pelvis of 3 in. conjugate, the head passing through in a flattened and compressed form, but without any depression or indentation upon it.

or shortly after birth, the advantage of dispensing with forceps, if possible, must be apparent. The injury to the child's eye in the case related would at first appear somewhat anomalous, it being the right eye, which of all other parts was least exposed to injury. Most probably, however, the discoloration did not result from direct injury, but was due to extravasation of intra-cranial or intra-orbital origin.

To compare still further these two methods of delivery, it is well known how fruitless a proceeding it is to attempt to push a mouldable mass, such as a hernial protrusion, through a rigid ring (and that the difficulty is greater in proportion to the smallness and the rigidity of the ring) if the force be applied *a tergo*. This might be given as an argument against supra-pubic propulsion, seeing that the head is partially mouldable and the brim rigid. But if the pressure employed is sufficient only to retain the advantage gained by traction, as previously recommended, this argument is not applicable. On the other hand, it may, I think, be used as an argument against forceps.

And, in the first place, it must be shown that the forceps acts not merely as a tractor in these cases, but also as a propeller, *so far as the head is concerned*. When the forceps grasps the head before traction is made, its effect is purely that of a compressor of the head, or, more correctly, of part of the head. The force of compression is conducted at right angles to the various tangents of the forceps curves. These forces may be resolved into their vertical and horizontal components, when it will be seen that the vertical forces exactly counterbalance each other. In other words, the force exerted on the head is equal at every part of the grasp. The forceps blades are thus so welded into the head that when traction is made and little resistance is met with, the head moves forwards, acted on purely by a *vis a fronte*. When, however, great resistance is met with, as in a contracted pelvic brim, the forceps being closed, and there being no means of exerting further compression, the head must recede, to a degree depending on the amount of resistance, towards the distal end of the forceps blades,[1]

[1] The variety of forceps which is best calculated to prevent such recession is that of Sir James Simpson, with its long lightly-curved blades; but even these will be found inadequate for such a purpose, to a greater or less degree, in cases where there is great disproportion between the size of the passage and that of the child's head. It may be said that such forceps has been constructed so as to allow of the highest degree of compression and elongation of the head being made that is compatible with the safety of the child, and that therefore recession of the head cannot occur without injury to the child. In reply, I would state that I have on frequent occasions observed a considerable part of the proximal side of the forceps grasp unoccupied by the head while strong traction was being made.

The rigidity of the blades (necessary to prevent their slipping) is such that their tips, naturally one inch apart, cannot be separated, under great strain, more than half an inch from their normal position, the handles remaining closed; so that recession *beyond* the tips cannot take place to any great extent.

and is thus compressed vertically. The head must thus behave as if acted on by a *vis a tergo*. The head, therefore, not only expands excessively in one diameter to compensate for the compression of the grasp in another, but the parts outside the grasp are made still more to double over the brim by this propelling force, which further increases the obstruction. When forceps are applied in vertex presentation, the tips of the blades are in contact with the rigid base of the skull, which as it were completes the arch of their grasp and gives them more efficient propulsive power.

It is not maintained that this *vis a tergo* is such as to have a powerful influence in preventing the head from passing the brim of a moderately contracted pelvis, but there seems reason to believe that it is an element in the explanation of those failures of the forceps in cases where the contraction has been found not insuperable to the method of version.

When the head is passing the brim vertex last, by traction on the body it is compressed equally at nearly every part of its circumference by a force acting at right angles to the surface engaged. This force is directed more or less upwards according to the amount of resistance ; and as there is nothing constricting it above, elongation of the head is freely permitted.

Another circumstance unfavourable to the success of forceps, in flat pelves more especially, might be adduced. If we consider the relation between the available area of the brim and the area of the section of the head that has to pass it, it is plain that any encroachment on the former directly increases the difficulty of passage of the latter. The forceps blades, applied at either side of the pelvis, not only of themselves occupy space in this available area, but when they grasp the head they necessarily leave behind them a still greater space unused by the passing head. The blades of the forceps in ordinary use, when closed, are only three inches asunder at their widest part, and are so rigid as to admit of further separation, under strong force, to not more than half an inch. When we remember that the measurement from side to side of the flat pelvis is normal (namely, 5¼ inches) or above normal, the amount of available area wasted in the application of forceps is seen to be considerable ; in the present case it would have been presumably not less than one square inch at either side.

Thus far the question of preferring version and avoiding forceps in the more exaggerated forms of flat pelvis, has been considered solely in regard to the interests of the child. It has still to be shown how much traction on the child's body, combined with supra-pubic manipulation, is warranted in the interests of the mother. It will be readily admitted that any amount of traction on the neck of the child that is consistent with its own safety is warranted consistently with the interests of the mother. In the four cases reported by Braxton Hicks,[1] already referred to, where

[1] *Guy's Hospital Reports*, 1870.

version succeeded after forceps had failed, no abdominal pressure seems to have been employed. Three children were born alive, and no damage was done to any of the mothers.

Goodell states that, using all the manual strength (for traction) he could command, he has never seen the body part from the head. In nine cases of version recorded by him, in major degrees of contracted pelvis, eight children lived and one died. In ten cases of version, for considerable contraction, recorded by La Chapelle, all the children died, and four mothers died. Of five such cases, with slight contraction, all the children were saved; one mother died of peritonitis.

"It will scarcely be believed," says Denman, in advocating version, "how seldom this operation (craniotomy) is necessary under such circumstances, nor have I ever found any ill consequences follow the compression of the soft parts between the head of the child and the sides of the pelvis, if proper attention were afterwards paid to the state of the bladder and rectum."

It is not difficult, in view of the history and post-mortem appearances in the case described, to believe that the operation had no direct influence in bringing about a fatal issue to the mother; that the result would probably have been the same whatever means had been adopted for her relief. The question to be solved is, can the operation be looked upon as the immediate cause of the peritonitis, or is the peritonitis to be regarded as of septic origin? The latter view derives strong support from the facts that for two days after delivery the patient remained well, the temperature keeping within limits that might be considered normal. The lochia, also, were healthy for the same period. When the lochia became fœtid the temperature rose, and when the former became more healthy the latter also became normal. Vomiting began on the evening of the 5th day, which does not favour a traumatic view.

Moreover, the gangrenous condition of the lining membrane of the genital tract, from which most probably the septic material was introduced into the system, must be attributed not so much to bruising of the parts as to the existing defect in the trophic condition of the tissues as an important predisposing cause.

The moral element alluded to, amounting in this case almost to insanity, was not to be overlooked in forming an estimate of the chances of recovery of the patient.

It would be interesting, and in a case such as this it would, I think, be practicable, to determine approximately the amount of alteration that has taken place by compression and elongation in the area of a horizontal section through the child's head at its widest part.

Ramsbotham[1] has estimated that a full-grown fœtal head may be lessened from side to side, without endangering the child's life, one-seventh of its own extent, or from 3½ inches to 3 inches. It

[1] *Obstet. Med. and Surgery*, p. 25.

is somewhat startling to find, in a later edition of Denman's *Midwifery*,[1] a statement made "that the extreme degree of diminution and change which the head is generally capable of undergoing (in its passage through the pelvis) is perhaps impossible to be determined; but it does not seem unreasonable to conjecture that it may be reduced *to* one-third of its original size without the destruction or even injury of the child from compression." I find, however, in an earlier edition, that the reading is "*by* one-third of its original size." There is nothing in the remarks preceding or following this statement to enable one to know what form of compression is meant, whether diminution in one diameter or another, or in the entire bulk of the head, to the extent of one-third. Nor does the author support this statement by evidence of any kind.

The rigidity of the bones of the head in children at full term varies considerably, and their capacity for being moulded will vary accordingly. The head of the child in the present case was not more mouldable than the average of mature fœtal heads.

In the accompanying outlines there are represented as accurate tracings of the pelvic brim and of a horizontal section of the child's head at its widest part as the nature of the case will permit. The area enclosed by each outline, in square inches, has been estimated approximately in the following manner:—

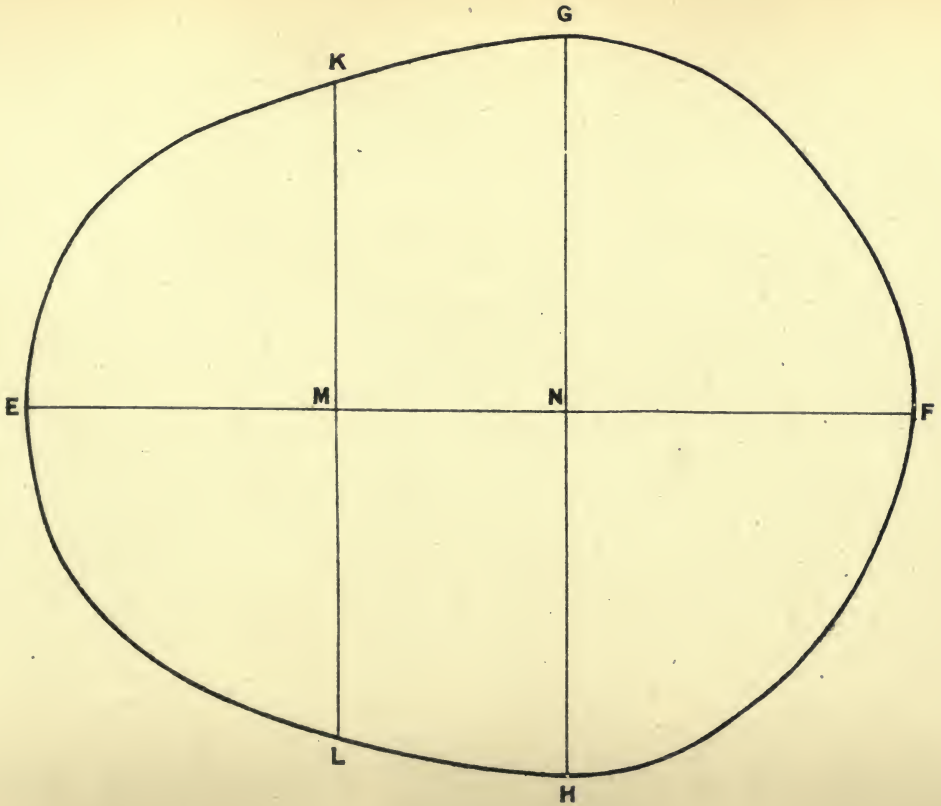
Area of section of head = area of outline EKGFHL = area enclosed by semicircle with radius NF (which is equal to half the biparietal diameter) + area enclosed by semicircle with radius EM (which is equal to half the bitemporal diameter) + area of space KH (which is equal to area of a quadrangular space MN) × the mean between the biparietal and bitemporal diameters.

Area enclosed by pelvic brim = area of outline ADBC = area enclosed by semicircle with radius $\frac{AD + CD}{2}$ + 2 area enclosed by semicircle with radius PQ + 2 (an area which has been accurately measured, and estimated at about $\frac{1}{6}$ sq. in.)

Thus:—

	Sq. in.
Area of semicircle GFH $= \frac{\pi r^2}{2} = \frac{3{\cdot}1416 \times (1\frac{7}{8})^2}{2}$	= 5·52
Area of semicircle KEL $= \frac{\pi r^2}{2} = \frac{3{\cdot}1416 \times (1\frac{5}{8})^2}{2}$	= 4·14
Area of space KH = MN $\times \frac{KL + GH}{2} = 1\frac{1}{8} \times 3\frac{1}{2}$	= 3·93
Total area, ...	= 13·59
Area of semicircle ACB $= \frac{\pi r^2}{2} = \frac{3{\cdot}1416 \times (2\frac{5}{8})^2}{2}$	= 10·824
2 Area of semicircle, with rad. = PQ = $\pi r^2 = 3{\cdot}1416 \times (\frac{5}{8})^2$	= 1·224
Estimated surplus area, ...	= ·333
Total area, ...	= 12·381

[1] Vol. ii. p. 49.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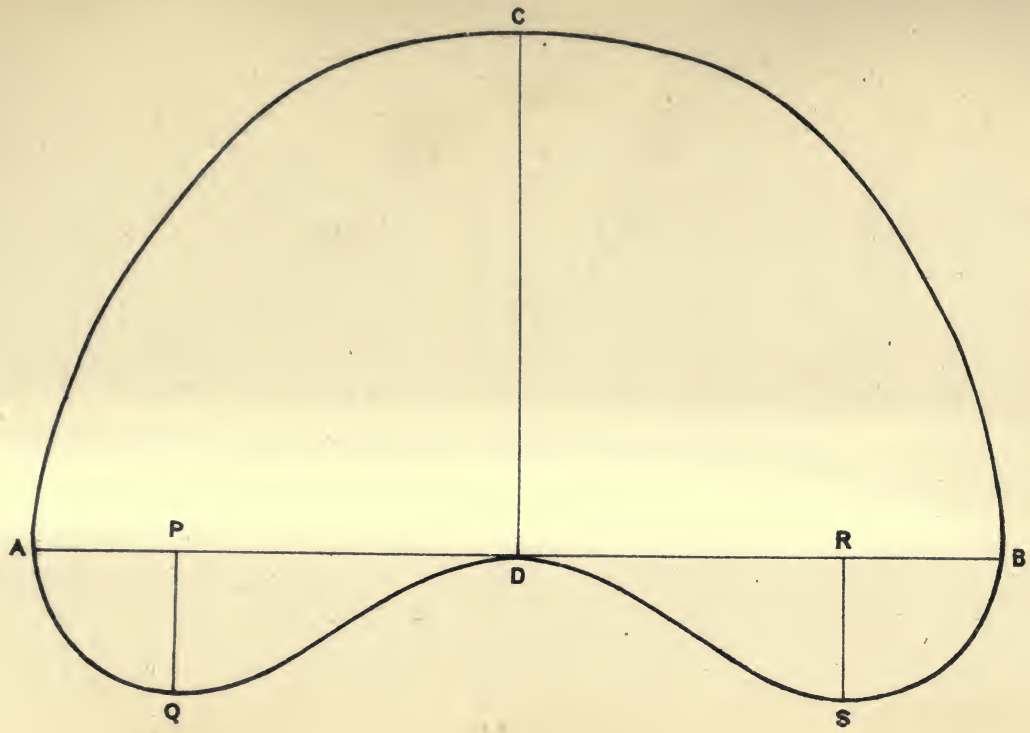
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Hence the area enclosed by the bony brim of the pelvis is 1·209 sq. in. less than the area of the section of the head.

The *available* area of the brim, which excludes the space occupied by the soft parts, and also a great part of the sacro-iliac recesses, might be estimated as approximately equal to the area of the semicircle ACB. That is, the available area is less than the area of the section of the head which engaged by 2·766 sq. in.

From these calculations the head must have had its engaging area altered, by elongation and compression, to the extent of fully one-fifth part.

(I should mention that I lately saw the child at the City Poor-house in a very thriving condition.)

Dr C. E. Underhill thought Dr Turner deserved their hearty thanks for one of the best-written accounts of a case that had ever been brought before their Society. The fatal issue was evidently due, as Dr Turner had shown, to septic peritonitis. The patient suffered little pain, and there was no deep injection of the peritoneum, and no injury to the parts. As to the treatment of the case, he congratulated Dr Turner on his success. He had seen one case, some years ago, where he had delivered a living child by turning after forceps had failed. He was inclined to believe that in the flat brim turning was better than forceps, while in the justo-minor pelvis forceps should be employed, as Goodell had clearly shown. In Dr Turner's case forceps would undoubtedly have failed. He congratulated Dr Turner on his excellent practical paper.

Dr Halliday Croom had not been present at the beginning of Dr Turner's paper, but had been pleased with what he had heard. The means at their disposal for the diagnosis of deformity of the pelvis in a woman were threefold. Thus they had (1) measurements, (2) mechanism, and (3) head moulding, to guide them. Now he wished to point out that in a primipara in labour it was difficult to measure the pelvis and observe how the head lay. In primiparæ, therefore, he advocated a trial of the forceps first in cases not so deformed as to require craniotomy. He thought nowadays they attached too much importance to fœtal life. In some cases he thought it better to perforate than to deliver a child at the mother's risk.

Dr Berry Hart had listened with very great pleasure to Dr Turner's valuable paper. The treatment of the case was admirable, and the only point on which he would offer any criticism was on Dr Turner's attempting to flex the head as it passed the brim. The reason the head passed the greatly deformed inlet was owing to its marked extension. In practice he had seen eight cases of flat pelvis where he had interfered, or advised interference, owing to arrest of the head at the brim. In all of them turning was employed; in only one did he fail to extract the child and require

to perforate behind the ear. In none of the cases had he a maternal death, and no fœtal death, unless, of course, in the craniotomy case. Some details of the cases were interesting. In one the previous labour had been a face case. Forceps were employed, and a still-born child extracted. Two of the cases were seen with Dr T. R. Ronaldson. In the first of Dr Ronaldson's cases, a face presentation, Dr Ronaldson had applied Professor Simpson's axis-traction forceps, and failed entirely to move the head. Turning extracted a living child easily. In Dr Ronaldson's second case the only two previous children had been born still, after prolonged forceps application. A living and very large child was extracted by turning in her third labour. Dr Simpson had also extracted a living child by turning, where, in a previous labour, craniotomy had been employed. It was often said that forceps should get a fair trial first in every case of head arrested at the brim where cranioclasm was not indicated, as the practitioner could put on forceps better than he could turn. It was about as sensible as saying that if a man had to cross a river he should first attempt to walk over, as he could walk better than he could swim. Any one who could turn even badly would succeed better by turning in a flat pelvis than if he applied forceps skilfully. Dr Turner's paper was specially valuable on two points. In the first place, a living and average-sized child had been extracted, breech first, through a pelvis with a *conjugata vera* of incontrovertibly $2\frac{5}{8}$ inches. In the second place, the proof that the area of the cross-section of the child's head was less than the area of the pelvic inlet showed more clearly than he had seen before the vertical elongation that must have occurred in the head as it passed the brim. Dr Turner's paper was a most valuable contribution to the treatment of labour in deformed pelves.

The President felt that he had little to add to the interesting discussion that had taken place. He agreed with almost all Dr Turner's conclusions. In regard to many cases reported, there always lurked an element of uncertainty so far as the estimation of the conjugate was concerned. We know that even the most accomplished obstetricians could not in the living woman determine the conjugate without leaving a margin of possible error of a quarter of an inch, so that many of the recorded successes had this drawback to our belief in them. But here, with the pelvis before us to measure its dimensions, there could no doubts arise in our minds. Dr Turner's case was one of the most important and accurate cases of the kind that had ever been recorded. Long before Goodell's paper, obstetricians, both in Germany and in this country, had arrived at the conclusion that the shape of the brim should guide the operator in his interference with the head arrested there. In a paper read before this Society in June 1873 he had himself strongly urged this doctrine. Primiparity was a very curious thing, as all knew that a difficult labour in a first

pregnancy may be followed by very easy subsequent ones. He would wish to protest against Dr Croom's low opinion of the value of the life of the fœtus, and would recommend him to read Dr Kinkead's paper. They never knew what a fœtus might ultimately develop into. In regard to the results got by turning in flat pelves, his experience agreed with that of Dr Hart. In the course of practice he had seen very many such cases, and had on many occasions delivered successfully by turning. In one very narrow conjugate of $2\frac{1}{2}$ inches, where he had the able assistance of Drs Underhill and Andrew, he got the child through, but still-born. Probably Dr Turner's patient would have lived had it not been for her want of rallying power. Dr Turner's paper raised the question as to whether turning might be substituted for craniotomy. Sir James Simpson's paper on this subject was well known to all. It was defective, however, in not differentiating the mechanism of the cases where turning was unadvisable. Dr Goodell's remarks on the amount of traction admissible were certainly extraordinary. American children must have very strong necks, or Dr Goodell must be physically weak. With much less force than Dr Goodell said he applied, he had seen the neck and spine snap. Traction should always be cautious, and especially well supported by abdominal pressure. Dr Turner's estimate of the pelvic and head areas was remarkably good. It was worth noting, too, that the child's head in this case was an average-sized one, so that the passage of a living child through such a narrow strait could not be referred to the smallness of the head. The Society was greatly indebted to Dr Turner for his able paper.

Dr Turner thanked the members of the Society for the reception they had accorded his paper. He had been much interested in the remarks made by those who had taken part in the discussion, but more particularly in the experience related by Dr Hart, whose cases formed an important addition to those already tabulated on the subject. In regard to suprapubic propulsion as a means of assisting delivery in head-last labours, he had expressed his belief that an extreme amount of force so employed was probably neither safe nor advantageous, that the full advantage of the method could be obtained by a moderate degree of pressure, if well directed. He thought it was very difficult indeed to distinguish with any degree of accuracy the nature of the deformity in cases of contracted pelvis until the child had been born, and that only oft-repeated and careful examinations of the pelvis and of the positions taken up by the fœtal head during labour would enable one to master the difficulty.

IV. *Dr Hart* then read his paper

ON SOME OF THE PHENOMENA OF PARTURITION IN THEIR PRACTICAL ASPECTS.

In a previous communication to this Society, on the "Nature of Prolapsus Uteri," I remarked that "in the formation of the female pelvic floor a structural problem had to be solved as follows:—The floor had to be constructed so that we should have some method by which it could be opened up to admit of the passage of the child's head; and while this was to be arranged in such a way as not unduly to impede parturition, the pelvic floor was not to be impaired in its structural efficiency, and was to remain sufficiently firm to resist ordinary, and to a certain extent extraordinary, intra-abdominal pressure." I endeavoured on that occasion to show how this had been effected *quâ* intra-abdominal pressure and its bearings on prolapsus uteri. To-night I wish to work out the problem already given, *quâ* parturition. This may be stated as follows:—At the end of pregnancy the fœtal head lies in the lower uterine segment and resting on the unbroken, compact pelvic floor. The vagina appears as a mere cleft, with the bladder, a pelvic organ, lying in front. Now, how is the bladder got out of the way of the advancing head? How is the urine stored and evacuated when the head fills the pelvis? How is the placenta got rid of? and, finally, Is there any arrangement for preventing the access of germ-laden air to the raw surfaces of the uterus, cervix, vagina, etc.?

Behaviour of Bladder during Parturition.—The facts as to the behaviour of the bladder need not occupy long. It is drawn up by uterine action, so that it comes to lie above the pubis—a position favourable for the storage of urine. It lies between the cervix and abdominal wall, with its anterior and posterior walls in contact. From this position, therefore, it results that during a pain in the second stage it is subjected to upward tension and antero-posterior pressure, and thus emptied. Often it becomes distended, reaching up even to the navel—a condition I have noticed in ordinary labours when it lay too much to the one side of the mesial line, or where, from too early administration of chloroform, the abdominal muscles did not aid in the second stage and compress the bladder, as I have above indicated.

So far, then, as we have gone, we see that during parturition the bladder is placed where it can distend to a limited extent, and that there is an arrangement by which it can be emptied during labour apart from the volition of the patient.[1]

Expulsion of Placenta.—Coincident with the expulsion of the

[1] A series of interesting observations could be made in a maternity on these points.

child the pubic segment of the pelvic floor drops accurately on the sacral one, and the uterus, much diminished in bulk, but still large and containing the placenta, lies anteverted on the pubic segment. In a short time uterine action sets in again. The pubic segment is probably slightly elevated, and the placenta squeezed edgeways into the vagina. At the same time there is a palpable diminution of the bulk of the uterus. So far the mechanism of expulsion is that so accurately described by Matthews Duncan. Uterine action may, however, expel the placenta out of the vagina too, but not as a rule.

The causation of the expulsion of the placenta from the vagina is different from that of its expulsion from the uterus. Let us consider now how matters are. The placenta is wholly in the vagina and cervix. It lies, therefore, between the pubic and sacral segments, *i.e.*, it has the pubic segment, uterus, and abdominal viscera lying above it. Its presence in the vagina causes a strain reflexly on the part of the patient, and accordingly by intra-abdominal pressure it is expelled from the vagina, while from the uterus it has been extruded by uterine contraction. It is held by some that the elasticity of the vagina itself causes or helps the expulsion of the placenta therefrom. The vagina, however, has been so distended by the head that it is improbable that the much less bulky placenta calls any elasticity into play; and, besides, it would require to be a peristaltic elasticity to be of any avail.

So much for some of the phenomena. We now take up—

Parturition viewed from the Standpoint of Prevention of Accession of Air.—I wish to glance at parturition viewed from the standpoint of the prevention of the access of air. Modern surgery allows air-contact with a wound only after it has been purified by carbolic spray, or, in suitable cases, prevents the access of air altogether. What, then, are the facts in regard to the access of air to the vagina and cervix of the unimpregnated, pregnant, and parturient female? In the unimpregnated or pregnant female there is never any air in the vagina (unless in exceptional cases) whatever posture, natural or otherwise, she may assume. The vagina has always its walls in contact in all natural circumstances. But what about parturition? The pubic segment is, during labour, separated from the sacral one, and air has access, probably, when the labour is in the second stage. After the child, however, is expelled from the uterus its walls are in contact, with the placenta only between them; and as the breech is driven out of the vagina the pubic segment follows it up, and when expelled, the vaginal walls are once more in contact. The same happens after the expulsion of the placenta; and ultimately the downpour of the lochia acts as an irrigant of no insignificant value. In parturition, therefore, access of air is limited during birth, and absolutely prevented while the child and placenta are being expelled. The whole process is quite analogous, in this light, to the valvular

method of opening abscesses, so as to limit the access of air, first practised by Abernethy.

So far I have considered certain facts in parturition. The question may, accordingly, be fairly asked, What practical bearings have these statements? And, first, in regard to the general management of parturition. The surgeon, in all his operative interference, keeps in mind as his type the simple fracture. The obstetrician, in all the ordinary manipulations necessary in a normal confinement, should keep the prevention of the access of air ever before him. Let me briefly sketch, then, what would be my ideal of a labour conducted intelligently and in accordance with natural facts. The parturient woman is in a private room, with pure air and perfect drainage. Abdominal palpation tells the practitioner that the fœtus is lying with its head engaging in the brim. Auscultation shows that the fœtal heart is vigorous and regular. As the pains go on he can feel the uterus diminishing the vertical height of its fundus above the pubes, until it ultimately expels a living child. He feels the uterus remain firm, and then, in about twenty minutes, notes its hardening and diminution in bulk simultaneous with the expulsion of the placenta.

Now this ideal is unattainable in one respect, viz., that vaginal examination is necessary. How is the accoucheur to render his vaginal examination as little dangerous to the patient as possible? In two ways. First, by seeing that his fingers are scrupulously cleaned with turpentine and carbolic acid; and, second, by taking care that his patient, while he examines, is never in the semi-prone nor genu-pectoral postures. These postures admit air when the vaginal orifice is dilated, and therefore are bad for ordinary obstetrical manipulation. This should be conducted when the patient is dorsal or semi-dorsal, with the shoulders raised. The fingers, passed while the patient is in this posture, separate the vaginal walls only where they touch them, and being followed up by them as withdrawn, air is prevented ingress.

Management of the Third Stage.—The mechanism of the expulsion of the placenta as given by Duncan clearly proves that traction on the cord to aid the expulsion is inadmissible under any circumstance. It is tempting and seems natural to help out a sluggish placenta with a gentle tug, but wrong nevertheless. The best means of imitating the natural process, when necessary, seems to me as follows:—After the child is born, the accoucheur should palpate the uterus, feel that it is contracted, note its bulk, and satisfy himself further that there is no bleeding from the cervix, etc. Nothing active should be done for twenty minutes or so. If the placenta is not then expelled, the following plan should be tried:—With the patient on her back, grasp the fundus uteri with both hands, fingers in front and thumbs behind. Squeeze it firmly in the direction of the line joining these, avoiding downward pressure. The uterus will then become smaller as the placenta is squeezed

out of it. It is now out of the uterus, as is felt by its lessened bulk. Then press down the uterus in the line of the axis of the brim. This drives the uterus against the pubic segment, and the latter against the placenta, forcing it out. Spiegelberg recommends the squeeze and downward push to be simultaneous, but I prefer them separated. Sometimes the placenta is difficult to get out of the vagina. This is owing to the curve of the posterior vaginal wall arresting it. Under such circumstances some recommend traction on the cord. A better plan is, however, to pass in two fingers into the vagina, hook back the lower part of the vaginal wall so as to get rid of the corner, at the same time driving the uterus down. In this way the exact mechanism is imitated, and access of air prevented. When more interference with labour is required, all attention should be given to the details recommended by Dr Croom in his able article on antiseptic midwifery.

MATTHEWS DUNCAN: *Mechanism of Natural and Morbid Parturition*, p. 246. In this article Schultze's mechanism, as figured in his *Wandtafeln*, is criticised.

A. R. SIMPSON: *Contributions to Obstetrics and Gynecology*, p. 147, where a clear account of the Credé method of expelling the placenta is given.

MUNDÉ: *Obstetric Palpation*. Wm. Wood & Co., New York.

The newer literature by Schultze, Spiegelberg, Freund, and others, will be found in recent numbers of the *Edinburgh Medical Journal*, *New York Medical Journal*, and *American Journal of Obstetrics*.

Dr Croom had little to say on the subject. He thought Dr Hart should have laid more stress on the importance of avoiding too frequent vaginal examinations.

Dr Gordon did not think the entrance of air into the vagina during parturition did any harm. He thought the placenta should be got rid of as soon as possible after the birth of the child, and thought that traction on the cord was right. Indeed, if they did not pull on the cord, he should like to know what was its use?

Dr Barbour was most interested in the final remarks as to the expulsion of the placenta when in the uterus and when in the vagina. He thought the hooking back of the perineum good.

The President had listened with interest to the paper. Unlike Dr Barbour, however, he thought the first part of the paper the most interesting. The description of the behaviour of the bladder during parturition was good and valuable. In his practical deductions he agreed with Dr Hart, and was not so little afraid of the entrance of air into the vagina as Dr Gordon was. Dr Duncan had shown that traction on the cord was bad, and an interference with the natural mechanism. His own practice was to turn the patient on her back immediately after the child was born, so as

to conduct the third stage with the patient in the dorsal position, because then the entrance of air was effectually avoided.

Dr Wilson had repeatedly known air enter the vagina during the third stage, and no harm ensue. He agreed with Dr Hart as to the management of the placenta, less pulling on the cord.

MEETING XI.—MAY 25, 1881.

DR ANGUS MACDONALD, *President, in the Chair.*

I. *Dr W. A. Finlay* showed a preparation of BOWEL from the case of a child with imperforate anus. After cutting over the site of the anus to a depth of 1½ inches he failed to reach the bowel, and therefore desisted. At the post-mortem examination the last half inch of bowel was found to be an obliterated cord, the tip of which was distant two inches from the skin of the perinæum.

II. *Dr James Carmichael* on

RETRO-PHARYNGEAL ABSCESS IN AN INFANT.

THIS disease is one peculiarly liable to occur in the period of infancy and childhood, inasmuch as by far the larger proportion of recorded cases have been observed at an early period of life. Of a number of cases recorded by Dr Allin, fully one-half were under ten years.[1]

The symptoms and general course of the disease, as well as its etiology, have been fully described and are familiar to all practitioners.

The object of the present communication is to relate a case, that of an infant five weeks old, the subject of this disease, and whose death was caused in a sudden and unexpected manner from a cause rarely if ever met with in such cases. In looking over the literature of the subject I have been unable to find any record of death occurring in the manner to be described, excepting in one case referred to by Erichsen.

For an account of the previous history of the case, and for permission to record it, I am indebted to my friend Dr James Sidey, under whose care it was. The circumstances are these:—On the afternoon of Wednesday, the 20th inst., I was asked to visit the child, the father bearing a note which Dr Sidey, who had seen it some hours before, had written to a well-known surgeon in this city, asking him to see the infant, with a view to possible surgical interference in the way of opening an abscess which Dr Sidey believed was situated on the left pharyngeal wall. This gentleman being from home, I agreed to visit the little patient. On entering the room the infant was in its mother's arms. Before I had time to ask any questions or

[1] *New York Medical Journal*, Nov. 1851.

examine the child, blood gushed forth from its nostrils and mouth, and in the course of two or three minutes the infant died. The amount of blood lost might be guessed at from 5 to 6 ounces. Dr Sidey gives the following history up to the period of his last visit:—"Mrs M.'s child, a healthy, well-nourished male, five weeks old, was out on Friday last, the 15th inst., for about half an hour for the first time. On the following Sunday, two days after, the first signs of illness showed themselves; the child was restless, and exhibited symptoms as if suffering from cold in the head. Two days thereafter, on the Tuesday, I saw him, and found the glands on the left side of the neck enlarged, and showing a tendency to impede respiration. On examination of the throat for diphtheria or scarlatina, I did not find anything to make me suspect their existence. There was no great amount of heat or signs of fever. The following day the glandular swelling was increased, and symptoms of impeded respiration more marked; the throat on the left side, in the region of the tonsil, was much swollen, and appeared as if an abscess was forming; respiration much impeded; the left half of the tongue was greatly swollen, and had a sausage-like appearance; the right half was thin and natural. I diagnosed pharyngeal abscess, and proposed to open it, and, as good luck would have it, did not." A post-mortem examination was made about twenty-four hours after death. The body was that of a well-nourished male child, and was extremely pallid. The neck and thorax were alone examined. Both lungs were voluminous, dark frothy fluid exuding on section. The trachea was partially filled with a similar fluid. The larynx contained several dark clots of blood. On examining the neck and pharyngeal region, the glands on the left side were generally enlarged. The tongue and all the pharyngeal structures were removed close to the spine. On examination a sloughy-looking abscess cavity, containing dark, unhealthy pus, was found external to and behind the left tonsil, communicating with the pharynx. The spinal cervical region showed no signs of caries or any other disease. A probe passed into the distal cut end of the external carotid artery entered the abscess cavity through a ragged opening in the arterial wall. The coats of the artery in the neighbourhood of the abscess were thinned and softened, and in a commencing sloughing condition.

Death from hæmorrhage in this manner is very uncommon, although, from the close proximity of large vessels in the neck, we might well expect it to happen more frequently. The present case is therefore one well deserving of record on account of the rarity of its termination, the age of the child, and the important surgical lesson which it teaches of the necessity of extreme caution in opening by the knife an abscess in this situation. We might readily picture the astonishment and dismay of the surgeon who plunged his bistoury into the pharyngeal wall in such circumstances. Death, as nature showed

us when she performed the operation in this case, was almost instantaneous. Had the opening been made by art, the luckless operator would have got the credit of killing his little patient.

As a contrast, it may not be unprofitable to refer briefly to the more ordinary course of such cases, and also to allude to the possible cause of the disease in the one at present under consideration. Dr Fleming of Dublin and Dr Allin of New York have both written interesting monographs on this subject. The disease, as we have already stated, is one specially liable to occur in early life, the largest number of recorded cases being under the age of two years. The earliest age of any hitherto recorded case which I can find is one related by Dr Hocken of an infant aged nine weeks.[1] The *causes* of the disease are various. Some observers consider that the causes leading to abscess may exist at birth. The abscess is perhaps most frequently the secondary result of previously existing disease, such as measles or scarlatina, erysipelas or syphilis, or locally of caries or other disease of the cervical spine, or of ulcerative or catarrhal pharyngitis, causing lymphatic glandular hyperplasia and subsequent inflammation. In several recorded cases the causation would appear to be primarily the result of cold, or the swallowing of irritating substances. The size and extent of these abscesses varies very much; in some cases the pus burrows down among the muscles, and even finds its way into the pleural cavity, causing death by pleurisy or empyema. The symptoms generally found vary somewhat according to the extent of the abscess. There is always more or less constitutional disturbance, often amounting to high fever, and invariably more or less dysphagia and dyspnœa. Can we assign any cause for the disease in the present case? The child, to all appearance, was perfectly healthy until five days before death. It had been out shortly before for the first time, and to all appearance had got cold, having exhibited symptoms of coryza. Dr Worthington[2] relates the case of a child nine months old, and previously healthy, in whom the abscess resulted from cold. It suffered greatly from dyspnœa and had many of the signs of croup during life. Another possible cause suggests itself in this case. Curiously enough, the day after this infant died one of the elder children in the family displayed a well-marked scarlatinal rash, with complete absence, however, of fever, sore throat, or any other of the usual accompaniments of this disease. The infant had not been affected with any rash or other symptoms of scarlatina, so that the existence of any fever poison as a predisposing cause is doubtful: still this fact, whether it be a mere coincidence or not, is deserving of note.

The *treatment* of this disease has been very generally conducted on the same principles in all recorded cases—the puncturing of the abscess on the earliest possible occasion on which its existence was assured, and the symptoms to which it gave rise were urgent, being recognised as the orthodox method of procedure. In

[1] *Provincial Medical and Surgical Journal*, 1842. [2] *Ibid.*

no recorded case to which I have had access has the probability of the occurrence of any communication between the abscess cavity and the great vessels of the neck been entertained.

The main interest of this case, in addition to the early age of the child, centres in this rare complication; and the question which suggests itself to every surgeon will naturally turn upon the possibility of distinguishing between a simple abscess and one that may be said to have been converted into a false aneurism by a large vessel having opened into its cavity. Whether there was any pulsation in the tumour during life had not been ascertained by tactile examination. Undoubtedly, in all cases, before proceeding to make an incision, this should be done with scrupulous care, and the precaution taken of compressing the carotid, to discover if any change in the tumour could be thereby produced.

The question of an abscess in the neighbourhood of an artery producing ulceration of its walls and hæmorrhage is important. Abscesses in which the inflammation is of a healthy character are not so prone to destruction of surrounding tissue. Healthy pus is formed, which naturally points in the direction of least resistance, and is soon evacuated. On the other hand, when you have a low form of inflammation with sloughing, as occurs after scarlatina or similar debilitating disease, the risk of ulceration of an arterial wall, if near at hand, is very great. Here you had no formation of healthy pus, but a gradual and progressive death of all the tissues in the neighbourhood. Erichsen[1] says on this point, "I have known this condition occur in the neck and in the thigh—in the neck from sloughing scarlatinal abscess implicating the carotid. When this untoward complication of abscess occurs in the neck, the hæmorrhage is usually so sudden and so profuse that the surgeon has not time to tie the carotid before life is extinct." Gangrenous abscess is sometimes found to occur apparently as a primary disease. A case of this kind, in which, however, no hæmorrhage took place, is related by Korman.[2] The child when first seen had been suffering from sore throat for several days. The soft palate and right tonsil were red, but no diphtheritic deposit observable. Cervical and submaxillary glands were enlarged and tender. Within a short time part of the soft palate, tonsil, and pharyngeal wall sloughed, causing a horrible stench. The patient got into a very collapsed state, but ultimately recovered under the use of ether injections and musk and sherry wine. On the fifteenth day of the disease, the wounds left after the separation of the sloughs had cicatrized. Dr Korman enters into a discussion of the diagnosis of the case as between diphtheritic gangrene and gangrenous pharyngitis, and concludes with the opinion that it was probably primary circumscribed gangrene of the pharynx.

[1] *Science and Art of Surgery*, vol. i. p. 117.
[2] *Jahrbuch f. Kinderheilkunde*, xvi. B., 2 H.

Dr Ogilvie Will, Aberdeen, had seen one case in a child ten months old, when he punctured the swelling, and the child recovered. He did not think Dr Carmichael's most unusual case should deter them from opening such abscesses. In some cases Hilton's plan of opening them from the outside of the neck would be found valuable.

Dr Finlay said that when hæmorrhage occurred into an abscess cavity, it was generally due to the pressure of the abscess causing absorption of the coats of the artery. Early opening of the abscess tended to prevent its occurrence. A tiny trocar might be used to ascertain that hæmorrhage had not already taken place. In Dr Carmichael's case the hæmorrhage appeared to be due to the walls of the artery participating in the general sloughy condition of the tissues.

Dr Wilson had seen one case, which simulated croup and opened spontaneously.

Drs Playfair, Hart, Chapman, Gordon, and Craig also made remarks.

III. *Dr Angus Macdonald* then read his paper on

CALCULUS IN THE FEMALE BLADDER.

The following case presents several points of interest which appear to me such as warrant its being brought before the notice of this Society, and being made the text of some observations upon this important subject.

The patient was a domestic servant, residing at Bathgate, æt. 18. She was admitted into Ward 28, Royal Infirmary, on the 28th February 1881, complaining of frequency of micturition, which was at the same time associated with great pain.

The increase in frequency had been progressive, the act being now performed every half-hour or thereabouts. The pain also had gradually become more intense.

Her menstruation began at sixteen, was of a twenty-eight days type, and usually continued a week. With the exception of the urinary system, the patient on admission presented a clean bill of health. On physical examination it was observed that both labia minora were loose, long, pendulous, and prominent. The hymen, though only slightly notched on the right and left, was readily distensible, and annular in shape. The patient, notwithstanding these peculiarities, denied emphatically the practice of masturbation. The urethral orifice appeared perfectly normal. There was some scalding of the insides of the thighs, and a urinous, disagreeable odour about the patient and her clothes.

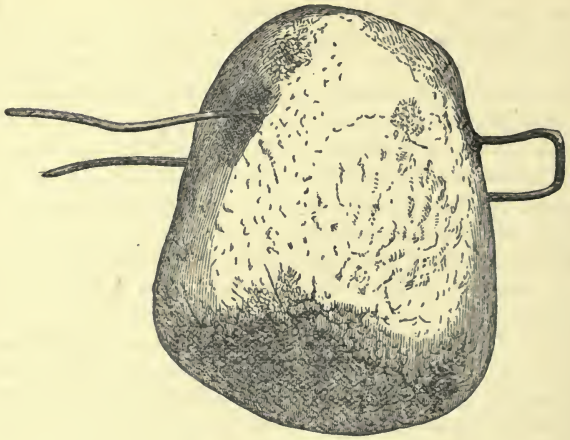
The vagina was observed to be loose and roomy, admitting two fingers. The uterus was felt to be displaced towards the right and posteriorly. The vaginal portion of the cervix was soft, and the

outer os patulous, but so far as uterus could be explored, it seemed normal. The sound entered its cavity 2½ inches, and caused no pain.

Projecting against the anterior vaginal wall, but situated more towards the left than the right, and displacing the uterus as above described, there was found a mass of stony hardness, about the size of a goose's egg, somewhat flattened from before backwards. This mass projected close to the upper end of the urethra, and over its surface the bladder wall appeared to be movable. On touching the mass with a sound introduced through the urethra, a grating noise was heard, and the instrument was felt to impinge against a rough stony surface. Examination of the urine proved that its reaction was alkaline, and that it contained a copious amount of crystals of the triple phosphate, some pus cells, and also a few crystals of oxalate of lime.

It being now clear that we had to deal with a vesical calculus, the question how it should be removed had to be determined. It was clearly too large to think of removal by dilatation of the urethra. The operation of lithotrity might have been tried, but would have been somewhat difficult on account of the size of the stone. Further, it would have been fraught with danger on account of the extreme condition of irritability in which the mucous membrane of the bladder was found ; and, moreover, we feared the presence of a troublesome nucleus, as so frequently occurs in such cases. The operation of vaginal lithotomy, on the other hand, being exceedingly easy in the adult female, presented the most favourable solution of the problem. Accordingly the last proceeding was resolved upon, and on the 2d of March proceeded with in the following manner:—The patient, having been anæsthetized, was placed in the semi-prone position. The perinæum was drawn back by means of a Sims' speculum. A sound was introduced through the urethra, and its point made to project against the base of the bladder in the mesial line, half an inch or so from the neck of the organ. The point of the sound was now cut down upon by the stroke of a pair of scissors. The one blade of a probe-pointed straight scissors was now passed through the opening into the bladder, while the other occupied the vagina. The opening was extended backwards in the mesial line in the direction of the cervix uteri for fully 1½ inch. I ought to have observed that when the patient was put under chloroform for the operation, and I was able to manipulate the tumour freely (which I could not do on the day of her admission, on account of the excruciating pain complained of), it was noticed that the anterior lower part of it was more movable than the rest. The impression conveyed to my mind was that a portion had broken loose from the main mass of the calculus, or that there were two stones. On opening the bladder, however, I found I had been mistaken, for so soon as I passed my finger into its cavity I found it pricked through coming in contact

with one of the sharp ends of this hair-pin (stone shown, *vide* drawing). With some difficulty I managed to guide the two ends



of the pin so as to bring them both out at the wound. Originally they had pointed more forwards than the anterior angle of the incision, and, after an ineffectual attempt to remove the stone by an ordinary lithotomy forceps, I grasped the two free ends of the hair-pin in a strong needle-holder, and was able to utilize them so as to facilitate the removal of the stone.

On effecting this object it was found that the mucous membrane of the bladder was so unhealthy, and so encrusted with calcareous deposits, that I resolved not to sew up the wound at once. I washed out the bladder thoroughly with a weak carbolic acid solution, and then had the patient put to bed. The bleeding during the operation was quite inconsiderable, and after the operation it was positively *nil.*

From this date the patient was entirely relieved of her pain. The wound gradually contracted of itself; but after waiting for four weeks in expectation of a complete closure, we found there was still an opening at the anterior end of the incision to the extent of about half an inch in length. Accordingly I then rawed and brought together the edges by means of several twisted silver sutures. A winged catheter with tubing attached to it was passed into the bladder and remained there without causing any inconvenience till the 8th day, when the stitches were removed. The wound was now found to have completely healed. When coloured fluid was passed into the bladder not a trace of it escaped per vaginam. The patient was able to retain her water for four or five hours at a time, had no pain, and was dismissed cured.

The patient at first denied all knowledge of how the hair-pin could have entered her bladder, but on being pressed with questions

she confessed to having introduced it about fifteen months previously. At first it gave her little or no annoyance, but gradually she began to experience difficulties in connexion with micturition, as already explained.

This case, otherwise interesting in several particulars, appears to me the more appropriate as a contribution to this Society, inasmuch as it represents a subject which has never been considered by it. With the exception of a case of stone in the female bladder successfully removed through the urethra by Dr Peter Young, an account of which was communicated by him to this Society in May 1861, the question does not seem to have been dealt with in the course of the existence of the Society.

The fact that stone is a rare affection in the female partly accounts for this. The readiness with which stones of an ordinary size may be removed through the urethra may also be credited with a certain amount of the omissions. There is little doubt that the shortness of the female urethra and its comparatively large calibre, as also the anatomical conditions of the female bladder, which do not give rise to a stagnating pouch as is the case in adult men, are important elements in determining the relative infrequency of the disease. At any rate, there is no question about its being very rare. Various estimates of its relative infrequency are given, most being agreed with Mr Pollard [1] that it is more than twenty times less frequent in the female than in the male. It would further appear that the infrequency would be still greater were it not for the introduction of foreign bodies into the bladder, which foreign bodies ultimately become nuclei round which calcareous matters are deposited. During the four years in which I have served in the Edinburgh Royal Infirmary, and during which a multitude of female disorders have come under my notice, this is the only case of stone in the bladder which I have seen.

I would like in a single line to draw attention to the striking fact that this hair-pin could have lain in this woman's bladder fifteen months, and during some ten of these should have given rise to little uneasiness. This fact is certainly a strange one, and goes to support the view which I have held for years, and which was so ably advocated of late before this Society, viz., that the female bladder, when empty, is not in a state of active contraction, but rather of loose collapse. For it stands to reason that if this patient's bladder had been powerfully, or even forcibly, contracted the first time it was emptied after this hair-pin was introduced, it could not fail to have been penetrated by the sharp free ends of the pin. The history of foreign bodies in the bladder includes many similar structures, yet penetration of the bladder wall seems very rare. Thus, needles of various kinds, pins, etc., are frequently found in the bladders of both sexes. Donné, *Moniteur des Hôpitaux*, No. 126–7–8, for 1856, adds to the account

[1] Holmes's *System of Surgery*.

of a woman who had introduced the handle of a stiletto into her bladder the particulars of 391 cases. An odd list it makes, in all conscience. It includes 78 portions of catheters and lithotrity instruments, 82 needles, pins, or tags, 6 bone or ivory needles, 6 earpicks, 3 ivory whistles, 1 ivory spindle, 1 ivory stiletto handle, 15 leaden balls, 3 small keys, and 8 metallic fragments of various kinds, 12 bones or splinters of bone, 10 pieces of pebble or china, 6 penholders, 15 needle-cases, 10 pieces of tobacco pipes, and 4 portions of glass tubing, besides other curious structures that we need not stay to mention. Of course, the catheters and lithotrity instruments would find their way into the bladder by accident, but the greater portion of the others must have been intentionally introduced under depraved sexual excitement, or for some other foolish reason. It has to be observed that Donncé's cases refer to both sexes.

From some more recent observations recorded, as, for instance, *Medical Times and Gazette*, vol. ii., 1865, p. 284, a hair-pin seems a favourite foreign body in the female bladder.

Diagnosis of Stone in Female Bladder.

The diagnosis is peculiarly easy. The modern practice of careful abdomino-vaginal examination renders the exploration of the bladder by touch both easy and thorough. In this way the existence of a foreign body in the bladder, its size and connexions, as also its mobility or otherwise, can usually be determined with great accuracy. To confirm the diagnosis, if need be, in most adult cases, the index finger may, without danger to the patient, be passed along the urethra and the stone felt. But that is only seldom necessary, and a better test of the character of the stone can be got by passing a sound and feeling the peculiar sensation which the calcareous matter communicates to the instrument, as well as hearing a grating noise. This can be done without subjecting the patient to either the pain or the risks of forcible dilatation of the urethra. In addition to these means we have the indications afforded by the irritation which the stone causes in the bladder, the pain on micturition, and the occasional interruption of the flow caused by the stone when it happens to fall down against the entrance to the urethra. The condition of the urine, especially its microscopical characters, is also to be considered. In the present case the size of the stone and the disturbance it gave rise to rendered the diagnosis especially easy.

Treatment.

As to treatment, in our case the size of the stone precluded entirely any thoughts of removing it by the urethra; whilst at the same time it equally clearly showed that the suprapubic operation was unnecessary. This being so, there remained only to decide between the operation of lithotrity and vaginal

lithotomy. The looseness and largeness of the vagina were in favour of the latter. My own want of special skill in lithotrity, and the fear that a troublesome nucleus would be found in the centre of the stone, which would render that operation difficult as well as dangerous, along with the unhealthy condition of the bladder, induced me to avoid lithotrity; and the sequel proved that it was a happy circumstance for the patient that I did not have recourse to it. I accordingly determined to perform vagino-vesical lithotomy, which I effected as above described.

It is now universally agreed that in such cases, if the condition of the mucous membrane be healthy, it is better to sew up the wound at once, as the edges readily heal; but in the present instance the mucous membrane was in an inflamed condition, and was coated over with a layer of calcareous *débris*, so that I did not deem it advisable to sew up at once, fearing that if I did so the patient would suffer from chronic cystitis, with all its drawbacks and disasters. It will be observed that Nature's efforts went far to fill up the huge gap through which the stone was extracted, so that the operation for final closure of the wound was a small one indeed.

A word or two now, in conclusion, upon the general treatment of stone in the female bladder.

1. The method of removal of the stone after forcible dilatation of the urethra. Notwithstanding the careful limitation by Simon and others of the amount of dilatation to which the female urethra may be safely exposed, I find among my professional friends a melancholy looseness of opinion still prevalent. I showed this stone to a good many professional friends, and I was particularly struck by the large number of them who, thoughtlessly, I daresay, yet with undoubted sincerity, asked me whether I had removed it by dilating the urethra. Now, I would wish to emphasize the fact that, though the female urethra is largely dilatable, yet it cannot be dilated beyond a certain tolerably well defined amount without landing the patient in incontinence of urine for life. The amount to which the urethra can be dilated with safety is given by Simon.[1] For an adult woman a circumference of 6 to 6·25 cms., or 2 3-8ths to 2 7-16ths inches, corresponding to a diameter of 1·9 to 2 cms., or three-quarters of an inch nearly. For a young woman from 15 to 20 years, a circumference of 5·6 to 6·3 cms., or 2 3-16ths to 2 7-16ths inches, corresponding to a diameter of 1·8 to 2 cms., or barely three-quarters of an inch. For girls from 11 to 15 years of age the highest degree of safe dilatation is, on the same authority, a circumference of 4·7 to 5·6 cms., or 1 7-8ths to 2 1-8th inch, corresponding to a diameter of 1·5 to 1·8 cms., or 9-16ths to 11-16ths of an inch nearly.

These observations agree with those made by Dr Alexander

[1] Volkmann's *Sammlung Klinischer Vorträge*, No. 88.

Ogston,[1] Dr Emmet, and a host of other observers. Indeed, as an average indication it may with safety be stated that the urethra of an adult woman will allow of dilatation, provided it is carefully conducted, to the extent of passing the index finger, or to something decidedly less than an inch in diameter, but that anything beyond that amount is liable to land the patient in persistent incontinence of urine. The experience of authors in regard to the proportions of dilated cases which become sufferers from incontinence is very various. Emmet found this sequel in two out of eleven cases; while Noeggerath had only two in seventy-five, or 2·66 per cent. Ogston (*op. cit.*) records a case of persistent incontinence in his own practice, in which he had removed through the dilated urethra a stone whose smallest diameter was an inch; and he also refers to two other similar cases, one of which occurred in the practice of Dr Davidson of Wartle, in which the smallest diameter of the stone was $1\frac{1}{8}$ inch; and another in the practice of Dr Paterson, of Inverury, in which the smallest diameter was 1 3-10ths inch. The cause of the incontinence from over-dilatation is somewhat difficult to establish. It would appear, from cases recorded, that the urethra will admit of much laceration without permanent incontinence ensuing, so long as the tear passes in the direction of its length; but that if the rupture passes across that direction, then comparatively a small amount of injury will be followed by incontinence, because the cicatrix thus arising prevents the mutual adaptation of the urethral folds at the neck of the bladder, by which, rather than by any sphincteric arrangement which the urethra possesses, the woman is enabled normally to retain her water.

If this be true, and the view is strongly urged by Emmet, it follows that urethral dilatation contains an element of uncertainty sufficient to make us all very careful in having recourse to it, whether with the view of improving a cystitis, for the removal of foreign bodies from the bladder, or for establishing a doubtful diagnosis. At the same time, it is perfectly clear, from the results obtained by Lane,[2] Emmet, Noeggerath, and Dr Alexander Ogston, that the original limit of Simon, viz., a diameter of $\frac{3}{4}$ of an inch in an adult woman, cannot be greatly exceeded without leading to disaster, whilst from accidental causes in regard to the direction of tear it may even happen that less dilatation may be followed by troublesome incontinence. It is fortunate that we possess in the index finger an instrument at once the most suitable for effecting

[1] *Edinburgh Medical Journal*, July 1879, p. 27. By a slip of the pen Dr Ogston misquotes Simon in his above valuable paper, by giving the diameter of 11-16ths of an inch as applicable to girls from 5 to 11 years, instead of, as Simon has it, from 11 to 15 years—a sufficiently important difference; for to dilate the urethra of a girl of five to a diameter of 11-16ths of an inch would certainly be disastrous.

[2] "Lithotomy in the Female," *Lancet*, 1863, pp. 36 and 57.

dilatation of the urethra, and a guide to that amount which is usually practicable within the limits of safety.

Most authorities who have performed this operation frequently are, I think, satisfied that rapid dilatation under anæsthesia, first with the little finger guided on a sound, and then with the index, is preferable to all other measures, whether with tent or with dilating instrument, in order to secure safe and rapid dilatation. I have kept no record of the number of times, but I am safe to say that I have, for therapeutical or other purposes, performed this operation more than twenty times, and I am glad to say I never yet met with other than temporary incontinence.

2. Vesico-vaginal section. This operation in the adult woman is so easily performed that it ought to exclude all other methods, not excepting dilatation of the urethra, except in those cases in which the stone is small enough to pass the urethra without requiring it to be distended beyond a diameter of $\frac{3}{4}$ of an inch, and in those very rare cases where the stone is too large to pass through the vagina, when the supra-pubic operation is necessitated. Lithotrity comes in as a fair competitor for vesico-vaginal lithotomy, and will be preferred or rejected very much according to the faith which the operator possesses in his own skill in conducting the operation, and the view he holds of the operation of vesico-vaginal fistula. Most gynæcologists have much greater experience of vesico-vaginal fistula than of stone, and, knowing the ease with which the vesico-vaginal wound may be closed, and the nearly complete absence of risk attaching to vesico-vaginal lithotomy, will be inclined, I think, with me, to prefer the latter operation to lithotrity. Pure surgeons, on the other hand, confident in their skill as lithotritists, may be expected to prefer lithotrity to vaginal lithotomy.

In performing the operation of vesico-vaginal lithotomy, the patient may be either placed in the lithotomy or in the semi-prone position.

The only essential precautions needed are to make sure that the incision shall be made in the mesial line, so as to avoid injury to the ureters, and not to commence the incision too near the neck of the bladder, in case we should thereby injure the retentive power of the organ.

I adopted, in the present instance, the method of Emmet, which consists in clipping down with the stroke of a scissors upon the point of a uterine sound made to project the bladder and vaginal wall a little behind the neck, and then to continue the opening thus effected, directly backwards, by means of a probe-pointed straight scissors.

This method has the disadvantage that it clips away a small portion of the mucous membrane of the base of the bladder, and in that respect, to some extent, interferes with healing afterwards.

Accordingly, I cannot help thinking it would be preferable to cut down with the point of a knife upon a grooved sound, and afterwards to enlarge the opening with scissors, as Dr Emmet recommends. The opening is brought together with silver sutures, provided the mucous membrane is healthy. But if, as in our case, we have cystitis, the best means of curing the cystitis is the rest and cleanliness afforded by the patent fistula. Nothing could have been more satisfactory than the results in our case, both in relieving the patient from pain and restoring the mucous membrane of the bladder to a healthy condition.

In some of these cases the opening through which the stone passes will be found to close of itself. In all of them it will greatly contract, but in most of them a subsequent operation will be required to complete closure.

The ease with which a vesico-vaginal wound can be closed up has led to great simplification of vesico-vaginal lithotomy, which was wont to be looked upon with terror in consequence of the fistulæ that were found to follow it. Even in bygone days, however, a certain proportion of such cases were found to spontaneously heal. Thanks to the labours and genius of Dr Marion Sims, a vesico-vaginal fistula, except when associated with much destruction of the bladder and vaginal tissue, really gives us no concern.

3. Lateral operation for lithotomy. This operation, which appears in modern times, at least, to have been introduced by Dr Andrew Buchanan[1] of Glasgow, where it was successfully performed by him in six cases, and where, also, it has been successfully performed by Dr George Buchanan[2] and Dr Morton, consists in cutting into the left labium minor, and carrying the incision, which commences about half an inch above the meatus urinarius, downwards and backwards, parallel to the left pubic ramus. Before commencing the incision, a grooved staff is first passed into the bladder, and this is employed as a guide for conducting the deep incision. The knife is made to enter the groove of the staff as near as practicable to the point where the bladder and urethra meet. The incision is then continued downwards into the bladder till it admits of seizure and removal of the stone. It will thus be seen that the operation is very much similar to that of lithotomy in the male. This operation leaves the vagina intact, and is suitable in the case of young girls, in whom vesico-vaginal lithotomy is impracticable.

4. The vestibular operation, and the operation for dividing the urethra, either from behind forwards or from before backwards, may be dismissed as possessing nowadays only an historical interest.

[1] *Lancet*, Jan. 1863, p. 58.
[2] *Medical Times and Gazette*, 1862, p. 453.

5. Lithotrity is more easily performed in the female than in the male, and appears very suitable for the case of stones that are soft and not too large. The recent improvements in this operation promise to make it still more suitable for the female. It presents nothing very special in its execution from the operation in the male. The main objection to its performance is the great danger of finding a nucleus that would give trouble, as in the present instance. Suppose, in this case, the stone had been crushed, the hair-pin, twisted most likely and disfigured, would have landed us in a state of matters that could only have been treated by vagino-vesical lithotomy after all, with the addition of extreme risk of tear or other injury of the bladder.

6. Supra-pubic operation. I need only state that this operation is only warranted when the stone is so large that it cannot pass through the vagina, and that, though it is a dangerous operation, the use of Listerian precautions robs it of much of its danger.

Dr Wilson said all must feel indebted to Dr Macdonald for his valuable paper and remarks on the value of the various modes of operating. Such cases were very rare. All were agreed as to the caution to be used in dilating the urethra.

Dr Ogilvie Will had listened with great pleasure to Dr Macdonald's interesting and valuable paper. It could be easily understood why stone in the bladder was much less common in females than males. In Aberdeen, stone cases were not so rare as in Edinburgh. He thought Dr Macdonald had followed the best plan of treatment in this case, although lithotrity had a higher position in his mind than in Dr Macdonald's. Now that Bigelow's operation had been so successful in the male, there could be no doubt that a stone of almost any size could be crushed in the female bladder, unless where there was a troublesome nucleus, as in Dr Macdonald's case. While Dr Macdonald had followed the best plan in his case, he hoped gynecologists would not fall behind surgeons in their appreciation of crushing.

Dr Macdonald thanked the Fellows for their reception of his paper, and Dr Will especially for his matured experience on these matters. Aberdeen had more than its share of stone cases, so that formerly Keith and Pirrie, and now, he was glad to think, some of the younger surgeons, had an enviable experience in the treatment of such cases. He did not by any means undervalue lithotrity, but he confessed he had no personal experience of it, whilst he had sufficient knowledge of vesico-vaginal fistula to prevent him, in a case like the present, from having the slightest hesitation in opening into the bladder through the vaginal wall. Besides this, he was rather afraid the stone would have a troublesome nucleus. The exceedingly irritated and inflammatory condition of the mucous membrane of the bladder likewise demanded the persistence

of a vesico-vaginal fistula for a time, to give the organ rest. The beneficial effects of this operation were soon apparent. He would have liked some expressions of opinion on dilatation of the urethra. He was very much astonished that so many of his friends to whom he showed the stone should have thought that such a large one could be extracted by the urethra, notwithstanding the researches of Simon and Ogston. One of the main objects of his paper was to insist on the limits of the safe dilatability of the female urethra.

MEETING XII.—JUNE 15, 1881.

DR ANGUS MACDONALD, *President, in the Chair.*

I. *Dr James Carmichael* showed the preparation of a RETRO-PHARYNGEAL ABSCESS CAVITY, with the carotid opening into it, on which he had read a communication at their last meeting.

II. *Dr Wm. Craig* then read his paper on a

CASE OF OCCLUSION OF THE SMALL INTESTINE IN A NEW-BORN CHILD.

CASES of occlusion of the intestine in a new-born child are sufficiently rare to justify me in bringing this one under the notice of the Fellows of the Obstetrical Society. This case is specially interesting on account of its rarity and the nature of the occluded portion of the bowel.

On the 11th April last Mrs A. was confined of her third child. Her first child was a female, and died soon after birth from some unascertained form of intestinal obstruction. I did not attend her on that occasion, but I have learned that the child died soon after birth on account of some obstruction in the alimentary canal; and although no post-mortem examination was made to ascertain the exact cause, yet I am fully satisfied that it was *not* imperforate anus. I attended Mrs A. on her second confinement fully two years ago. The child was a healthy female, and had no abnormality whatever. It is still living, and is strong and healthy. Both parents are young and healthy. I also attended her on the present occasion. Her labour was easy and natural. The child was a strong, healthy male. When I called the next day I found that the child had been very restless during the night, and had evidently been in great pain. It had vomited considerably, and the bowels had not moved. The child passed its urine quite freely. The nurse had administered some castor-oil, but it too had been vomited. I now learned for the first time the circumstances regarding the death of the first child already referred to.

On carefully examining the child I could detect no malformation. The anus was quite perforate, and I easily introduced up the rectum for fully two inches an ordinary full-sized gum elastic catheter. I could find no trace of meconium on the catheter. It was covered with a white mucus. I was quite satisfied that the obstruction, if any such existed, was situated too high up in the abdomen to be operated on from the perineum. I ordered injections of soap and water, but these failed to bring away any fæcal matter. On the second day after the birth of the child there was slight distention of the abdomen and well-marked tympanitis. The vomiting still continued. The vomited matter was of a greenish-yellow appearance. As the bowels had not moved, it was evident that there was some serious intestinal obstruction within the cavity of the abdomen. The case appeared to me quite hopeless. In fact, the child was fast sinking. It died on the third day, about seventy-two hours after birth.

On the following day I was allowed to make a post-mortem examination. I found the abdomen distended, and in many parts discoloured. On opening into the abdomen the peritoneum was seen to be slightly inflamed, and some bloody serum was found in the peritoneal cavity. The upper part of the small intestine was congested, enlarged, and greatly distended, and there was on the small intestine a well-marked obstruction, the exact nature of which I could not at the time determine. I accordingly removed the whole of the alimentary canal situated within the abdomen, for the purpose of having the abnormal condition of parts carefully examined.

Mr Symington, Lecturer on Anatomy in the Edinburgh School of Medicine, has carefully examined the preparation, and I am greatly indebted to him for assisting me to arrive at an accurate description of the parts. The following was what Mr Symington and I found:—

There was a well-marked obstruction situated in the upper fifth of the ileum. At the seat of obstruction, on the side of the bowel opposite to the attachment of the mesentery, there was a fibrous band resembling in structure the great omentum, about two inches long and one inch broad. The opposite end was free in the abdomen. This was probably a part of the great omentum which had been originally attached at both ends, and may have been the primary cause of the constriction. Be that as it may, this fibrous membrane was in no way constricting the canal at the birth of the child. Above the point of obstruction the bowel was thickened, greatly congested, and dilated to the size of that of an adult. It was distended with gas, and contained meconium. The mesentery was thickened and congested. The stomach was healthy and normal; so was also the duodenum. From the commencement of the jejunum the intestine was somewhat dilated, the dilatation gradually increasing till it reached the point of

obstruction. Below this point the small intestine was slightly less in diameter than normal, and was filled with a greenish granular-looking substance mixed with mucus, but contained no meconium. The large intestine was about the thickness of a quill, and contained only white mucus.

On opening into the bowel above the obstruction it was discovered that the intestine ended in a *cul de sac.* We next opened into the bowel below the obstruction, and found that the intestine commenced in a *cul de sac.* These two portions of bowel were connected by a band of fibrous tissue, ribbon-shaped, half an inch in width and about the same in length. The band was quite translucent when held up to the light.

Such being the pathological condition of the intestine, several interesting questions present themselves. What was the nature of the occlusion? and how was it produced? There was no continuity of the canal, but complete occlusion for half an inch. Whether or not there ever was continuity of the alimentary canal at this point cannot now be determined, but it is evident that if ever such a continuity existed it must have been very early in embryonic life, for the contents of the bowel above and below the occluded portion were very different, there being no meconium in the part below the obstruction. It is quite possible that there may have been continuity of the intestine at this part, and that a piece of the great omentum becoming adherent to the bowel may have dragged on the bowel and have produced congestion and inflammation of the intestine, and the two opposing surfaces, being brought into contact by the dragging of the attached band of omentum, would adhere to each other. The continuity of the bowel would then be destroyed, and thus complete occlusion would occur. The occluded portion of bowel would afterwards become partially absorbed, and hence its present translucent condition. I do not assert that this is what happened, but I affirm it is at least a possible, if not a probable cause of this rare malformation. Cases of congenital malformation of the alimentary canal are not very uncommon, one of the most frequent forms being that known as imperforate anus, a condition of parts easily accounted for by a reference to the development of the lower bowel. I am not aware of any case exactly similar to the one now described, and therefore am unable to explain fully all the circumstances connected with it. To my mind, however, the above hypothesis more fully than any other accounts for the pathological conditions present in this instance.

With regard to diagnosis and treatment not much need be said. It must be evident to all that the exact nature of the obstruction could not have been ascertained during life. Two things were indeed plain, that there was some intestinal obstruction present, and that it was not imperforate anus. It was also apparent that the seat of obstruction was high up in the abdominal cavity. A

catheter passed up the rectum easily for fully two inches, and no bulging of the intestine could be felt.

With regard to treatment I have not much to add. It is evident from the nature of the occlusion that no treatment could by any possibility have saved this child's life. The treatment adopted, castor-oil by the mouth and injections by the rectum, failed; but it is also evident no treatment could have relieved the obstruction, and I maintain that the treatment adopted was the proper one in the circumstances. It was proved that no operation by the rectum or perineum could have been of any avail, nor could have been justifiable, seeing that the occlusion was so high up in the abdomen. The operation of gastrotomy in the new-born infant is one which could hardly be successful under any circumstances, and in this case it was nearly two days before one could be certain that an obstruction existed at all, and by that time it was too late to be of any avail. Even in the adult the operation is one at all times attended with great risks, and it is one which would hardly be justifiable in a new-born child, the more especially when we bear in mind that obstruction in the new-born child is generally due to malformation, and not unfrequently, as in the present case, a malformation which cannot be rectified.

Dr T. R. Ronaldson thought Dr Craig was too absolute in saying nothing could have been done in this case, especially considering Billroth's cases of excision of the pylorus. He wished to know if it would be advisable in such a case to open into the abdominal cavity for diagnosis, if treatment were found impossible.

Dr Hart had something of the same feeling as Dr Ronaldson. At the same time he did not think anything could have been done in this special case.

Dr H. M. Church related a case where a child died from stoppage of the bowels, and where on post-mortem examination numerous intussusceptions were found; of course these might have occurred just before death.

The President felt indebted to Dr Craig for his interesting case. Dr Craig, indeed, had quite the luck of getting hold of such. The explanation Dr Craig had advanced seemed tenable. As to opening the abdomen in cases of obstruction, his opinion at present was negative. He remembered two cases. In one seen in consultation, the lady was *in articulo mortis*, and on section they found evidence that previous inflammation, by forming a band of organized tissue connecting two adjoining folds of bowel, had caused such a constriction that fluid pumped up or down produced obstruction. He thought that if in this case an exploratory incision had been made, this band could have been snipped and the lady's life saved. Two months afterwards he saw a young gentleman, æt. 35, with obstruction; and, full of his previous case, he got Mr Chiene to see the patient in good time. Mr Chiene saw him

thrice that day, and then, like the shrewd surgeon he is, refused to operate. On post-mortem they found that Mr Chiene was right, as there were very extensive chronic inflammatory adhesions that could not have been divided. This operation required extreme judgment and care in deciding whether it were advisable in each individual case, and should never be recommended as a matter of routine practice.

Dr Craig thanked the Fellows for their reception of his paper. Despite the criticisms of Drs Ronaldson and Hart, he was still of opinion that nothing could have been done in this case. The difference of calibre in the intestine above and below the obstruction would have effectually prevented their union by suture. Then no case had been as yet recorded of abdominal section in a new-born child. As to intestinal obstruction in adults, he had seen three cases in six weeks. One died after abdominal section; in another the obstruction, occurring during pregnancy, was fatal; and the third, sent to Hospital in time, died also, the surgeons declining to operate. On post-mortem the case was found to have been a hopeless one.

III. *Dr Napier* then read his paper on

CLINICAL OBSERVATIONS ON PUERPERAL TEMPERATURES.

THE lessons we learn daily by means of thermometry are many and multiform. The thermometer is, in everyday routine, of more importance than even the stethoscope, and will doubtless become still more valued as an aid to diagnosis than it is, as medical observation becomes more exact, or the great examiners of the profession, the public, more exacting. I make no attempt to follow the history of the clinical thermometer. Since its introduction in 1614 by Sanctorius,[1] so great alterations have been made on the instrument, and so very different significance is attached to the evidence it affords in different diseases, that the labour of tracing the gradations of opinion is greater than the present subject demands. Yet, as bearing in some measure on what follows, it is impossible to waste time by briefly referring to the large importance with which body heat was regarded by the ancients. A high temperature was held by most as synonymous with fever, and all these authorities agreed that fever consisted of a preternatural increase of the innate heat of the body. I desire to avoid the evident pedantry of dragging these worthies from their well-earned repose, and merely remind you that Palladius, Hippocrates, Galen, Aetius, Alexander, Actuarius, Cælius Aurelianus, Haly Abbas, and the Arabians generally, seem to have held much the same opinions. "The heart was the seat of the preternatural heat, and by means

[1] *Medical Thermometry*, Wunderlich, N. Syd. Soc., p. 20.

of the arteries arising from it this heat was diffused over the whole body and injured its actions." Some held "that fevers or increased temperatures were identical with inflammations," and we have not to go far in modern medical literature to find this doctrine of Erasistratus reproduced by some physicians, *e.g.*, the lately produced theory that pneumonia is not a primary lung affection, but the local manifestation of the febrile condition by which it is usually accompanied. In writing of the cure of "pestilential fevers," Celsus draws attention to the necessity of employing energetic measures, "especially if the fever be attended with a burning heat."

While theoretically we are all taught nowadays that the constant use of the thermometer is essential to intelligent practice, I venture to think that, except in hospital wards, unless there seem prominent indications for its use, the practice is behind the theory. For example, I was recently attending a lady who was nursed by one of the best Edinburgh monthly nurses. As is my usual custom, I used the instrument morning and evening. About the fourth day after delivery the nurse gravely asked me, "Is there anything wrong with Mrs So-and-so?" I replied, "No; why do you ask?" "Because," she said, "I see you take the temperature so often." I inquired, did she not learn at the Maternity to do so, and did not her teacher (one of the best) tell her to do as she saw me do? "Oh yes," she answered; "but with his private patients Dr X. never uses the thermometer *if all is going well.*" Now, if the nurse's statement was true, here was an instance of a successful and deservedly respected teacher neglecting in private practice what he enforced with his hospital patients. No wonder if we find it difficult to get nurses to work intelligently, when the foremost obstetricians may occasionally be found so Greek-like in saying what they do not carry out.

"The whole subject of body heat, its production, its dispersion, and their disturbances, call for more general attention than they have yet succeeded in attracting. The use of a clinical thermometer as a diagnostic aid is now very general, but a like interest in the *rationale* of hyperpyretic temperatures is far from being equally general. Men will use a thermometer assiduously who cannot, however, be induced to give much thought to the how, the why, and the wherefore of the pyrexia."[1]

"The investigations of Wunderlich and others have shown that by careful and repeated observations of the temperature of the body valuable information as to the nature of the disease may be obtained, and even, in some instances, by its means alone, a diagnosis may actually be arrived at."[2]

It is certain that there has been, within the last few years, an effort to differentiate between diseases and varieties of the same

[1] *Practitioner's Handbook of Treatment*, Fothergill, p. 99.
[2] *Clinical Medicine*, M'Call Anderson, p. 6.

disease by temperature, and already not a little has been accomplished in this direction. Aitken,[1] who has based most of his observations on Wunderlich's researches, has done much to popularize this movement in England. A decidedly practical article on "Temperature as a Diagnostic and Prognostic" appeared lately in *Le Practicien*,[2] and constantly medical science is receiving similar additions.

But in text-books on midwifery little or nothing is found. Leishman[3] has not a single chart, and Playfair[4] but one, so that there is still great necessity for inquiry and research regarding the due import of temperature in the puerperal condition. The importance of thermometric observation in midwifery is not only to be measured by what we learn of how hot, how ill the patient is; but also it determines the first approach of an unwonted, unnatural, and undesirable condition. A rise of temperature is frequently the first reliable indication of evil. It is true that the test of body heat may be fallacious, but what test is not? Of the more common fallacies we will hereafter treat. The few objections which can be brought against frequent use of the thermometer in private practice may be easily disposed of. If using the instrument in the axilla, and if the physician, on entering the room, after the due examination of the index, leaves it at 85° to 90°, causes the nurse or the patient herself to place it *in situ*, and permits it to remain there five or seven minutes, there is neither indelicacy, trouble, fatigue, nor annoyance to the patient; or loss of time to the doctor, as few can put in an ordinary visit in less time. And should it be too much to expect the busy practitioner to pay a regular evening visit, it is inexpensive and trouble-saving to leave a self-registering thermometer with the patient, which will tell its own tale next day.

My present desire is to direct attention to the fact that certain special indications or interpretations can be gleaned from the use of the thermometer in the post-partum period. When we find a man wisely shaking his head at such attempts to discriminate between varieties of temperature, we must, with all charity, believe that he is either more fortunate or reckless than scientific in his practice.

I have, without the slightest other indication, been able to prognose mastitis by this means a week or ten days before the appearance of other symptoms. It may be argued that the mastitis was the result of the increased temperature under the special circumstances of the puerperal development of the gland; or, again, that such cases were septic, ending in the local development of pus. To the latter theory I would reply that this slight increase of temperature, on which I based my prognosis, was quite unlike the development of septicæmia in any of its forms. There seems a most extra-

[1] *Sci. and Pract. of Med.*
[2] 13th Jan. 1879.
[3] 2d Ed., Glasg.
[4] 2d Ed., Lond.

ordinary desire on the part of some to hide all bad recoveries under one cloak, and septicæmia appears such an ample one that the spare folds are expected to hide the rents in the garment. Nor do I here refer to weid, with its distinct and almost pathognomonic symptoms. In those mild cases of febrile action ending in mastitis, before as well as after the gland is knotted or inflamed, we may, and generally do, have some rise of heat which is not long continuous, and disappears with the local development of pus or on the exhibition of treatment. And in these cases the thermometer is of the greatest value, as most often there is neither rapidity of pulse, chill, nor rigor, no alteration of the lochia, no thirst, headache, nor languor, to warn us of anything amiss. That other varieties of bad recovery are well heralded by the respective temperatures is also true. That there is a temperature for peritonitis, metritis, pelvic cellulitis, including ovarian affections (which is, I confess, loose classification), and for septicæmia, I have formerly endeavoured to show;[1] but since the occurrence of the cases on which these statements were founded I have been working pretty assiduously at the subject, and can further elaborate my former theories.

Nothing is, perhaps, less satisfactory in medical literature than the exhibition of one particular symptom in disease, to the exclusion of others of equal or almost equal importance, and of this I am quite conscious; yet it is quite unreasonable to expect full and complete details in an ephemeral paper, and quite as much so to look for unwearied patience in the digestion of such a contribution.

As illustrating the benefits of precision in thermometry and the lessons to be deduced therefrom, I have to direct attention to two cases under the care of Dr John Williams in University College Hospital; and *en passant* I remark that sometimes the consideration of the heat records corrects the tendency of statements that are in the main rather general. The first case is "Rupture of Vagina into Douglas's Pouch; Peritonitis; Recovery."[2] Labour took place on 13th Nov. Before delivery the temp. was 101°. The delivery was effected by craniotomy. 16th Nov., temp. 99°·4; 17th, 100°·4. It seems to have reached 100°·6 on 20th Nov., but no other record was above 100° F. The second case, "Pregnancy complicated by Ovarian Tumour, Abortion at Fifth Month, Puerperal Fever, Ovariotomy; Recovery,"[3] is a most interesting one. Delivery on night of 14th Sept.; 16th Sept., temp. 100°·6; 17th, 104°; 18th, 106°. Do symptoms like these indicate one disease? No, say the readings, and we agree; but, again, would most of us regard the first case as one of puerperal peritonitis? I think not. To differentiate between such cases the thermometer is of very material assistance. If we regard the first quoted case as illustrative thermometrically

[1] *Obstet. Journ.*, xciii. p. 645.
[2] *Brit. Med. Jour.*, 12th Feb. 1881, p. 231.
[3] *Ibid.*, 18th December 1880, p. 937.

of that form of peritonitis (?) which we have broadly named cellulitis, and that the case was a slight one, we are nearer a classification. Be this as it may, we have here two markedly different cases differently treated, and both cured. To what is the diagnosis in great measure indebted? Do not temperatures show at a glance the great dissimilarity? Yet without these some might regard both as "puerperal fever," one mild, the other severe. I have been observing the temperatures of nearly all my puerperal patients carefully for about seven years, and, without giving full details, which I avoid for economy of time, may state that the following observations are based on sufficient material to be very fairly worthy of acceptance. The deductions which I have drawn are from personal observation on a considerable number of cases.[1]

In enunciating my views I have to use various terms which require a little explanation. Early, signifies either immediately after delivery, or at latest within three days. Sudden, without warning, or with so mild precursory symptoms as to seem so. Persistent, is used in a modified sense, not signifying strictly continuous, but almost so. Gradual, signifies the step-by-step gentle incursions of the disease.

Typical Temperatures.—In the following it is to be remembered that the statements refer to the axillary temperatures as estimated by the Fahrenheit instrument only; and in some measure the difference between higher records of temperature taken per vaginam or rectum are to be explained. Wunderlich,[2] for instance, regards 107°·6 as a common temperature in septicæmia. So far as more recent observations may be quoted against the name of the pioneer of the science, this is an exceptional height; and unless we assume this to be an *internal* record, or that the type of puerperal septicæmia is somewhat different, or, still more likely, that another most important element, the treatment by reduction of temperature, is explanatory of the lower temperatures more often met with, it is difficult to reconcile his statement with common experience.

Peritonitis affecting the peritoneum more especially covering the womb, and from hence extending to the epigastrium, shows an early sudden temperature. The usual date of invasion is between the second and third day; I have seen it within twenty-four hours. A rigor very frequently ushers in the rise. The range is from 103°·5 to 104°·5; probably 104° is sufficiently accurate. Bad cases of severe general peritonitis may soon show a higher temperature, but with these other grave symptoms will become evident. Traumatic peritonitis has a lower temperature than that from septic or other infective causes.

Metritis is an affection difficult to consider *per se*, as, however

[1] In connexion with this paper I exhibited thirteen charts of illustrative cases, besides which I have many others, and the difficulty of selecting from these has caused me to withhold all in the meantime.

[2] *Medical Thermometry*, p. 361.

much we may desire to distinguish its varieties, it is not always possible to state positively that the disease is a perimetritis, a parametritis, an endometritis, a pelvic peritonitis, or a metroperitonitis. Yet for broad purposes of diagnosis and prognosis the local symptoms are usually sufficient. The temperature is from 103° to 104°. I have observed one case without any evident peritonitis reach 104°·9 (almost 105°); but I think this unusual, and unless there is a concomitant peritonitis, phlebitis, pyæmia, or septicæmia, 103°·5 will be found about the mean. A special aid is afforded by the pulse, which will be mentioned hereafter. The invasion of traumatic metritis is about the third day, if from autogenetic, or other heterogenetic causes, it may be either very rapid (a few hours) or delayed to a week; if the former, it is either quickly mastered by treatment, or lapses into another form of metria.

Septicæmia, if ante-partum, averages 100°–101°. There is a well-marked persistent rise after delivery is effected. In health it is to be remembered that there is usually a fall below the normal for some hours, then a slight rise till the establishment of milk, and thereafter a fall. The septic rise is a very constant one, so that in a few hours there may be an increase of two or three degrees. There are so many seeming varieties of septicæmia, and the *quæstio vexata* of puerperal fever and puerperal septicæmia affords so wide ground for controversy, that I content myself with stating facts briefly which may apply to both that which may be called specific or true puerperal septicæmia or puerperal fever, and metric septicæmia or puerperal septicæmia. In septicæmia the temperature may be as high as 107° (commonly 107°·6, Wunderlich); it is never lower than 102°·5 at some period of the case if the illness is from septic poisoning. The average temperature, possibly as modified by treatment, is 104°·5. I have had cases of autogenous origin, so far as could be judged, which terminated fatally, and in which, until the very end, except on one or two occasions, the highest reading was 103°. The temperature rises at night from 1° to 3°. Mixed cases of septicæmia, *e.g.*, arising from the virus of scarlatina, rubeola, typhus, etc., have usually high records. Septicæmia in anæmic patients, and in those suffering from albuminuria, is less marked by high temperature. Still, again, rare cases may be met with in which the temperature is modified in a remarkable way, as when metria is complicated with rheumatism. The intense prostration from pain and exhaustion, which doubtless materially influences the production of body heat, must be considered as a prominent factor in such cases. It is the stationary high temperature that is worst, more especially if without discoverable local lesion to account for its existence. When a septic temperature remains above 102°·5 persistently for two or three days despite treatment, it may be regarded as at least two or three degrees higher naturally, and is thus most ominous.

When the night rise ceases there is an unquestionable advance to a favourable prognosis. In certain instances the temperature falls rapidly before death, *i.e.*, from collapse, but I think the fall of temperature is less usual than the fall of pulse in like circumstances. Certain hours seem to show an increased heat in septicæmia. The temperature rises from 5 to 8 A.M., thereafter falls; at from about 4 to 6 P.M. there is an increase, after this a decrease; and again from 9 or 10 P.M. until 1 or 2 A.M. a decidedly high record.

Pyæmia gives very various temperature curves. The temperature is not necessarily very high (102°–103°), except after each rigor, when from 1° to 3° more may be marked. In this form there is more often a recurrence to a high record after the norm has been touched than in septicæmia, and in some protracted cases the temperature is not to be much relied on without due regard to the local symptoms.

Pelvic cellulitis, oöphoritis, parametritis, etc., which arise postpartum, have a temperature about 102°; if pus is formed, there is a temporary increase to 103°–104°. The invasion is gradual, beginning at 99°–100°, and in two or three days reaching the heat mentioned. Cases may, from the absence of other symptoms, be so overlooked that, unexpectedly, after a few days of seeming languor, a comparatively high temperature is discovered on examination. For the most part such cases require a week or ten days for their development. If a traumatic lesion exists previously this does not hold good. Arising, as these cases frequently do, from imprudent early rising on the third or fourth day after confinement, we may thus find an explanation of the abnormal heat in as many days after as it takes the subacute inflammation to develop. Exceptional cases are met with in which these inflammations arise three weeks or a month after delivery; these are ushered in by a rigor, temperature of 103° or 104°, which falls within forty-eight hours usually to about 102°, and remains there till the subsidence of the disease. It is well to note this, as such cases form a large proportion of the popularly named "bad recoveries" which, from insufficient care or neglect, are overlooked, and may be an evil for years or a lifetime. Attention to the abnormal temperature would cause greater precaution to be observed than most often pertains; and it is a mere everyday experience for all of us to meet with chronic cases of "sore side" which need not have been.

Weid, or milk fever, shows a high temperature, yet the persistency is not great. A rigor commences the illness; in two hours after, the temperature reaches 103° or 104°. The invasion is late but rapid, and the local development of mastitis follows the fever. I have previously referred to another class of milk fever cases which differ from the foregoing in the mildness of their nature, but are more continuously febricular. In these, as I have

mentioned, the mild continued fever indicates the mammary disturbance. But the formation of a mammary abscess, if of late origin, does not often cause much constitutional disturbance. The temperature touches 100° or thereabout, and speedily falls on the evacuation of pus.

It is thoroughly recognised that temperature is affected by mental emotion, fright, retention of clots or secundines, retention of urine, constipation, or errors in diet. Various authors might be quoted illustrating the rise of temperature after terror. Dr Mahomed[1] relates a case. According to others, "puerperal fever" may originate from fright or mental emotion;[2] "milk fever" may be also induced by the same cause.[3]

From mental emotion the temperature rises suddenly. I have had cases at 102°·4, 104°, 104°·9, 105°·2, and know of one which reached 106°. The duration is usually short. If no other cause exists, the normal will be regained within forty-eight hours; sometimes two or three hours is sufficient.

Retention of secundines and blood coagula may show increased temperature without the fever being in any way caused by septicæmia. The irritation induced by the foreign body in the uterus causes the rise. I have related a case[4] with a temperature of 103°·2. After the expulsion of a clot the fall was almost immediate, and the record normal next day. About 101° is the average heat in such cases. Retention of urine and constipation shows 100°·5, or, for a short time, more; 99° if after three or four days from the date of delivery is a usual observation.

The temperature varies in individuals (97°·6–99°·5) at different periods of the day (1°·5), and after food (1°). All these observations apply to parturient women in common with other individuals, but, in addition, it is stated that the subsequent puerperal temperature is influenced by the time of day at which delivery took place. It is lowest in women who have been confined at 11 A.M. I abstain from quoting several authorities in support of these generally received facts, but a recent article by Dr Waters[5] will repay careful perusal. Personally I have noted a range from 97° to 101° during the course of one day; there was a *suspicion* only of metritis, which came to nothing. At night the record was 99°·5, next day 98°.[6] Certain individuals have, during confinement to bed, a temperature of 97°. One lady I have attended twice has shown this after both labours on repeated examination; the pulse was 76, the age of my patient

[1] *Brit. Med. Journal*, 12th May 1877.
[2] Dr West, *Obstet. Soc. Trans.*, 7th July 1875; *Brit. Med. Journ.*, 24th July 1875. Dr Braxton Hicks, *Brit. Med. Journ.*, 12th July 1875, p. 780. Dr Edward Tilt, *ibid.*, 4th September 1875, p. 244.
[3] Sir Charles Locock, *Cyc. Pract. Med.*, vol. iii. p. 12, 1833.
[4] *Obstet. Journal*, No. xciii. p. 643.
[5] *Brit. Med. Journal*, 22d Nov. 1879, p. 806, *et* 20th Dec., p. 978.
[6] *Obstet. Journal, loc. cit.*

21.[1] On the other hand, some, without another unnatural sign, have a heat of 99° to 99°·5 for a week or ten days after accouchment.

The relations of the pulse to the temperature cannot be entered into fully here, but a passing word will assist us in elucidating the above. In the puerperal period a slow, absolutely slow pulse with a high temperature is at times met with; if so, the record of the thermometer signifies little. A relatively slow pulse with a high rate of body heat is indicative of metritic inflammation (pulse, 100; temp., 104°). A pulse relative in rate to thermometric record 120–104° is to be distinguished in some measure by its character, wiry, peritonitic, full and bounding, less likely to be dangerous. A high pulse, 140 to 160, with 102° to 103°, is symptomatic of extreme exhaustion. If the pulse in the course of an illness is 80 or under for 48 hours continuously, the temperature need not be feared, however high it is. I have met with but one exception.

What is the cause of the increased temperature? And what is the explanation regarding rigors? The various causes of increased body heat are, to state them briefly (α) Deficient power of heat dispersion; (β) General heat produced by a defined local cause; (γ) Increased power of heat production; (δ) Chemical changes within the organism; (ϵ) Changes in the vaso-motor nerves or vaso-inhibitory nerves; (ξ) Or, finally, abnormal conditions of brain or spinal regulating nerve centres. Taking a wide view of the question, it seems we might, without serious loss to a clearer apprehension of what is still unquestionably undefined, dispense with the four first mentioned as likely to be inseparably connected with the two latter. Whether a definite centre for heat production exists or no has yet to be proven; but whether the vaso-motor nerves of the sympathetic act as simple contractile or as dilating and contractile agents, and whatever the precise value of vaso-inhibitory nerves from the cerebro-spinal system and local centres of nerve moderation is, it is certain that in an unnatural condition of the nervous system is to be found the main explanation of abnormal temperatures.

I dare say we do not err in ascribing an increased body heat to an effort on nature's part to rid herself of disease. We may describe the heat production as the result of an internal struggle which is waged between vitality and virus (understanding by virus, not simply the narrow interpretation, but any malign influence affecting the human economy). Vitality, if sufficiently powerful, expels virus, and, beating her back step by step, ultimately pushes the intruder through the portals of the system; and virus, to pursue the metaphor, deluges the outworks with her tears. More prosaically, acute diseases end by crises and the

[1] Since the above was written I have met with another example of an almost identical nature.

usual perspiration. In lysis the struggle, if less severe, is more protracted, the end not very dissimilar.

In certain conditions of the blood and nervous system the body is less able to resist disease. In pregnancy we have a watery state of the blood and perversion of nerve control. These, with the addition of the shock to the system caused by parturition, both by depletion and the expenditure of *vis nervosa*, and the rapid changes which the uterus undergoes during the process of involution, and the necessarily accelerated blood-circulation for the establishment of lactation, severally and conjointly are likely factors in the production of abnormal heat. Women who are of sensitive organization are more likely to assume the febrile condition than those who are of equable temperament. Unmarried women and primiparæ are more likely, *cæteris paribus*, to suffer from metria than matrons and pluriparæ.

Laying aside for the time other considerations, we can have unanimity of opinion that the neurotic influence is great in many diseases and symptoms. The influence of terror or joy on the catamenia, on lactation, on the functions of the alimentary canal, on various local and general diseases, on existence itself, is too well known to require more than mention. Hundreds of examples may be found in current literature.[1]

These considerations — and they are but brief outlines — lead us to the point that the nervous system plays a most important part in the production of body heat. Excessive sensibility is congenital in some; it is produced in the majority of women during pregnancy and parturition. To this neurotic disturbance is also to be ascribed the production of rigors which in many cases evidently precede the increased temperature. From the consideration of rigors we can learn a good deal. A rigor is not simply an indication of the advent of the febrile condition; it demonstrates that perverted function has already taken internal possession; it is the signal of distress which the nervous system throws out on its being perturbed by the invading malady. That rigors are not always present, or, if so, unnoticed, is not singular; but it is as usual an experience to find, as naturally to be expected, that metric affections accompanied with much pain are signalized by a decided rigor. The recurrent rigors characteristic of pyæmic affections are to be regarded as the attempts of the system to throw off the repeated doses of the poison by crises. The rigors which are not uncommonly an accompaniment of cases which are of purely mental causation are accounted for in the same way; they are manifestations of internal nervous irritation. In slowly invaded cases, where the disease is more gradual and insidious in development, the climax, as shown by rigor, is seldom reached. Possibly the nervous sensibilities are too much exhausted to resist

[1] Vide *Nature of Life*, Dr Richardson (Lewis, 1879), pp. 270-294.

the intruding evil after it has assumed such dimensions as to be of vital concern. In such cases the vitality has been previously undermined. In some terribly rapid cases of puerperal death there is no time for the exhibition of rigor; the system succumbs to the poison ere it has had time to summon resistance. In many cases the rigor is so mild that it escapes notice, and in others I believe it is never present, owing to individual peculiarity or to some of the preceding causes.

To briefly recapitulate. We have to rely on temperature in puerperal patients as indicating that there is an abnormal condition which may be of much or of little significance. And, further, it is to be remembered that the temperatures as here stated were in all likelihood modified by treatment, which probably explains the difference between my observations and those of others who have given higher records.

(1.) Temperature varies in the normal puerperal condition. In certain individuals it may be as low as 97° F. or as high as 99°·5 for a week or more without a single bad symptom. The average for the three or four days immediately succeeding parturition is 98°·5 to 99°; the subsequent heat is modified by the hour of delivery, but to only a small extent. The healthy puerperal range is 2°·5.

(2.) No temperature over 99° (unless accounted for by individual nervous susceptibility) is normal after four days. The healthy patient may have an *occasional* night temperature of 100° or 101° within the first four or five days, but a continuing, or even a morning or day record like this requires an explanation.

(3.) Slight causes, *e.g.*, constipation, retention of urine, etc., give a rise to 99°–100°·5, sometimes more.

(4.) Retention of clots or secundines, 99°–101°, or upwards; 103° at times.

(5.) Weid has a sudden late temperature of 103°·5, with rapid pulse; the heat falls quickly with the development of the local affection. Other cases of mastitis are mildly febrile for several days.

(6.) Metritis (endo- and peri-) gives record of 103°·5, with slow pulse.

(7.) Peritonitis has a single rigor and a sudden early temperature of 104° or upwards; the pulse is wiry. General peritonitis, if severe, 105°·5–106°.

(8.) Pelvic cellulitis, oöphoritis, parametritis, etc., have a heat of 101°–102°·5; the pulse is weak and irritable. Recurrent rigors mark fresh deposits of pus, and are followed by temporary increased heat, 104°·5.

(9.) Pyæmia and uterine phlebitis average 103°, perhaps more. Cases in which the veins are rapidly affected are soon 104°·5 to 106°, and end speedily. Pyæmia is frequently late in development, 7–10 days.

(10.) Septicæmia varies from 102°·5–107°. The heat is never less, at least for some period of the twenty-four hours, than 102°·5, if the case is properly established. The temperature is liable to variations, but after the norm has been reached is less so than pyæmia. There is no security from remission till the night temperature is under 100°. Recovery may take place after 106°, but is rare.

(11.) Mental emotion may show 104° or even 106°, and we may sometimes have in addition symptoms resembling metro-peritonitis. These cases do not persist, and are generally normal in less than forty-eight hours.

(12.) If the temperature does not rise within ten days from delivery, there is little risk of grave disease unless from gross imprudence in exposure to cold, or zymotic infection.

(13.) Although the temperature is moderately low, 100°–101°, so long as the pulse continues 120 or more we are not safe from relapse. No anxiety need be felt so long as the temperature is kept under 102°. However fast the pulse, if the temperature continues low the prognosis is favourable. An evident exception pertains when temperature is low from collapse. If the temperature is persistent at 102°, or frequently recurs to this point, there must be an abnormal organic condition.

(14.) Temperature should be observed night and morning for the first seven days, and daily for three to seven days after, more especially if any instrumentation has been required for delivery, or if zymotic or epidemic disease prevails. When an abnormal temperature is discovered, it should be reduced to the normal as early as possible by one or other agent. It is of the highest moment to bring it down to 100° and *keep it* there or lower.

It is impossible to summarize all cases of abnormal puerperal febrile conditions thermometrically. A few notable exceptions I have met with, but these are so exceptional as to require special and individual attention, and cannot be brought under general rules in all points.

I have avoided discussing the best means of reducing puerperal temperatures, as I consider this may be better treated of in a separate paper.

The President considered Dr Napier's paper an able and original one, and had listened to it with extreme satisfaction. He thought Dr Napier had advanced the subject of puerperal temperatures a stage. We still wanted a standard temperature for the lying-in period; and at present he himself was attempting to elaborate such a standard, and meant to publish a chart soon along with his quarterly Maternity report. He thought that temporary jumps in temperature were more common than Dr Napier allowed. It was rare indeed to have a patient in their Maternity without the temperature being at some time or other

102°. He was struck with one fact, viz., that it was quite usual to have subnormal temperatures, as Dr Napier had said. His own observations had fully borne out that fact. He agreed with Dr Napier as to the difference between temperatures in septicæmia (lymphatic septicæmia) and pyæmia (venous septicæmia). It was beyond his understanding, however, how Dr Napier diagnosed mastitis 10 days before it occurred. He was exceedingly pleased with Dr Napier's original research and the evident personal energy and scientific spirit with which he had carried it out. Every one who had attempted this kind of work outside an hospital knew the enormous difficulties and the toil involved in its execution. When to this is added the fact that Dr Napier's cases were dispersed through a widely scattered country practice, our appreciation of the amount of hard work needed to complete such a paper is very greatly heightened.

Dr Napier expressed his thanks to the Fellows for their reception of his paper. He had undertaken this research as he was unable to get any information on the subject from books.

MEETING XIII.—JUNE 29, 1881.

DR ANGUS MACDONALD, *President, in the Chair.*

I. *Dr Hart* showed for *Dr Simpson* a beautiful specimen of HYDATID DEGENERATION OF THE CHORION. The patient from whom it had been obtained was admitted into the Buchanan Ward on account of the occurrence of hæmorrhage and watery discharge. The uterus was enlarged to about the size of a six months' pregnancy, was irregular in outline, and doughy. There was a loud bruit, but no fœtal heart. The diagnosis was easy, although no characteristic vesicles were found in the discharge.

II. *Dr Macdonald* showed an INVERTED UTERUS he had removed by amputation. It was interesting to note that no peritonitis was present on the uterine peritoneal surface.

III. *Dr Macdonald* then read his

QUARTERLY REPORT OF THE ROYAL MATERNITY AND SIMPSON MEMORIAL HOSPITAL.

IN the report I have the honour now to submit to the Society I am in the happy position of being able to state that there has been no maternal mortality during the quarter either among intern or extern cases. I am entirely indebted for the preparation of the materials, as also for their elaboration, to my residents in the Hospital during the quarter, viz., Messrs Wells and Hodsdon, whose careful notes of the cases afforded the most accurate and compre-

hensive groundwork for the digest. I am, however, especially under obligation to Mr Wells for constructing the entire report from these materials, and I take this opportunity to express my feelings of gratitude therefor.

During the three months ending 31st April the number of cases attended amounted to 155. Of these 99 were extern cases, while 56 were delivered in the Maternity Hospital. Of the former, 13 were primiparæ, and 86 multiparæ; while of the latter, 36 were primiparæ, and 20 multiparæ.

Of the extern cases the average ages were—multiparæ, 30 years; primiparæ, 22¼.

Of the intern cases the average ages were—multiparæ, 26 years; primiparæ, 20 years and 8 months.

The infant mortality and sexes of infants were as under:—

Extern Cases.

	Males.	Females.	Stillborn. Males.	Stillborn. Females.	Putrid Cases.
Multiparæ,	51	39	4	2	2
Primiparæ,	3	10	0	0	0
Intern Cases.					
Multiparæ,	10	10	0	3	0
Primiparæ,	22	14	5	1	4

Average Duration of Stages of Labour.

	First Stage.	Second Stage.	Third Stage.
Multiparæ,	10 h. 29 m. (19 cases).	1 h. 9 m. (19 cases).	8 m. (19 cases).
Primiparæ,	18 h. 36 m. (31 cases).	1 h. 26 m. (34 cases).	8½ m. (35 cases).

In extern cases the data procurable are not sufficiently accurate to make statistics at all reliable.

The presentations in intern cases were as follows:—

L.O.A.	L.O.P.	R.O.A.	R.O.P.	R.M.P.	L.S.A.	R.S.P.
34	2	4	12	1	2	1

Of the R.O.P. presentations two were persistent, one of these being in a fully developed infant, while the other was premature.

There has been no maternal death during the puerperium of either intern or extern cases.

Complications.

Among the 99 extern cases there were the following complications:—

Four cases of plural birth (twins). In three of these the birth had occurred before the arrival of the attendant. The sexes were as under:—

In three cases both were males, while in the fourth the sexes were male and female.

The presentations were,—

1. Both vertex.

2. Both vertex. The placenta had only one amniotic sac, and was exhibited at the Obstetrical Society.

3. Vertex and footling.

4. Both vertex, L.O.A. and R.O.P., one child being much larger than the other.

In No. 1 both infants survived; in No. 2, owing to the entanglement of the cords, the first child died during birth; in No. 3 both children died within three days; in No. 4 both survived.

A case of breech presentation. Child not delivered alive.

A case in which there was extensive general anasarca in the fœtus, and considerable hydramnios. There were no dropsical symptoms in the mother. The child had evidently been dead some little time, the skin on the feet and hands having begun to peel off. Owing to the great enlargement of the child's body, no progress was made after the birth of the head, and the nurses attending the case had to send for assistance. On arrival it was found that the head had been born twenty minutes. Firm pressure was at first applied from above. The uterus was felt to contain a great quantity of fluid, and was not easy to manipulate; and the woman complaining greatly of the pain, resort was had to traction from below, and after a good deal of force had been used the child was extracted.

A case of anencephalous fœtus, sixth month, with enormous hydramnios. The face presented. The heart beat for some time after birth, but no respiratory effort could be induced, although the lungs were filled with air by the passage of a catheter into the trachea, tracheotomy having been performed. The insufflation of the lungs with air had a marked effect in increasing the number of the heart's contractions and their strength. The medulla oblongata in this case seemed to be absent. The placenta was calcareously degenerated and universally adherent to the uterus, and had to be removed from the uterus by the hand. In both this case and the previous one the uterus was washed out, immediately after delivery, with the douche and glass tube to be subsequently spoken of, and on the following day the vagina was washed out. The solution employed was carbolic acid 1–50 of tepid water. In both these cases the temperature on the day following was normal.

There were four cases of uterine inertia requiring the use of forceps. In all these cases the woman had been some time in the second stage before instruments were employed. In two of these the ordinary Simpson's forceps were used—in one Professor Simpson's axis-traction forceps, and in one Tarnier's forceps. In the case where Simpson's axis-traction forceps were used there was slight pelvic contraction, as ascertained by the pelvimeter and the hand. In all instrumental cases the vagina and uterus were gently washed out with 1–50 carbolic lotion immediately after delivery, and the vagina alone was washed out the following day. In no instrumental case was there perineal laceration.

Intern Cases.

Before considering the intern cases, a few details regarding the management of the wards may be given.

In each ward, during both day and night, an aqueous emulsion of carbolic acid 1–10 was vaporized by means of a spirit lamp. When the ward was more than usually full, two such apparatuses were kept working.

Napkins dipped in carbolic and subsequently dried were employed in every case. It was found especially needful to dry that part of the napkin which rested under the buttocks, as otherwise an abrasion of the skin was apt to occur. All dirty napkins were at once placed in a pan containing carbolic solution 1–20. The vagina of each patient was washed out with slightly warm water containing 1–60 of carbolic acid thrice daily by means of a douche and a glass tube, each patient having her own special glass tube, which, when not in use, was kept under 5 per cent solution of carbolic acid. In cases where the lochia were more than usually offensive, the vagina was washed out four to six times daily. The patients seemed to find these vaginal douches very grateful.

It was noticed that after a stay of three weeks or so in a ward the temperature began to rise all over the ward, and in these cases a move was at once made to the other ward, whilst the ward previously occupied was thoroughly fumigated. Any case showing the slightest doubtful symptoms was at once isolated. As a preventive measure against gonorrhœal ophthalmia, the eyes and face of every new-born infant were at once washed with 1–50 carbolic solution, some of it being dropped in between the lids. In all there were two cases of ophthalmia, one previous to this treatment and one subsequent to it.

Immediately after delivery the vagina of each patient was well washed out with 1–60 solution.

Among the 56 intern cases there were 5 cases of instrumental delivery. Only one of these was a severe case, with marked pelvic contraction. The patient was a primipara. In it the measurements of the pelvis were—

Il. cr., $9\frac{1}{4}$; il. sp., $8\frac{1}{2}$; inter-trochant., $10\frac{3}{8}$.

Ext. conjug., 7; diag. conjug., $4\frac{1}{4}$; true conjug., $3\frac{1}{4}$.

The patient having been four hours in the second stage of labour, and the measurements indicating a justo-minor pelvis, Dr Macdonald applied the ordinary Simpson's forceps. With these sufficient progress was not made, and so Tarnier's instrument was substituted, and delivery effected after very considerable traction. The fœtal heart was heard beating very slowly when the head was on the perineum. After some time the child was resuscitated, but it subsequently died. The perineum was quite intact.

There was a case of face presentation, R.M.P., in which the mechanism was that normal to such cases. Dr Macdonald

delivered the head when it was nearly on the perineum by short forceps.

In another operative case uterine inertia caused the interference by forceps, the second stage having then lasted some hours and there being no progress.

In another case where forceps were used, the patient was the subject of right hemiplegia and aphasia, the result of a previous labour, and probably due to embolism occasioned by mitral stenosis, from which she suffered. After a fair recovery she was removed to her own home, and whilst there was evidently neglected, for when removed to the infirmary, where she subsequently died, she was suffering from extensive bed-sores.

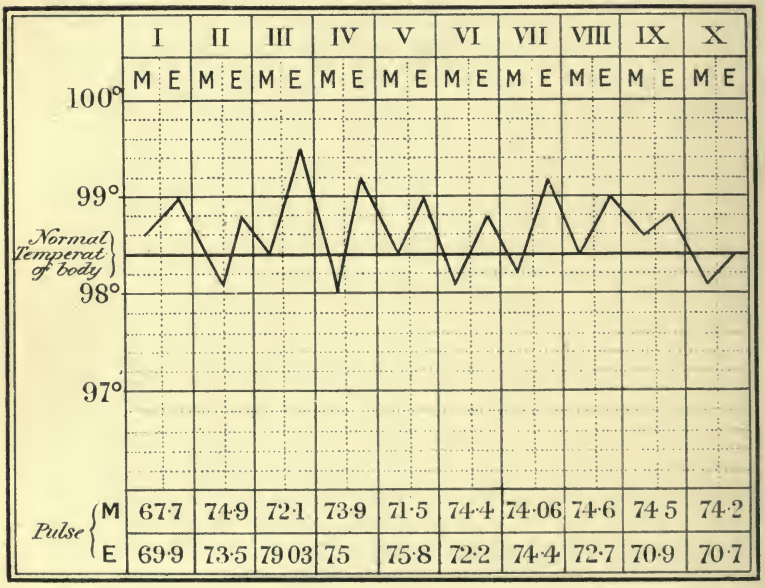
In the last instrumental case the patient had a slight amount of contraction at the outlet, the ischial tuberosities being abnormally near to each other; and the patient being exhausted by a long second stage, the uterus had not power to expel the head. This patient had suffered from chronic gonorrhœa before her confinement, which was treated at first with injections of sulphate of zinc, and subsequently by injections of copaiba. After delivery a considerable portion of the vaginal walls near the outlet sloughed, and as carbolic solution was found to cause much pain, a solution of salicylic acid, 1–300 in glycerine and water, was injected, and a pledget of salicylic wool soaked in salicylic acid dissolved in glycerine was used to keep the raw surfaces apart, and constantly renewed to prevent any discharge accumulating. She made an excellent recovery, and the vagina healed satisfactorily.

In two cases where the lochial discharge was very offensive and high fever was present the uterus was washed out with 1–50 carbolic, with the effect in both instances of bringing away stinking *débris*. The temperature subsequently fell in a marked degree. In the latter of the two cases recourse was had to this procedure on four occasions with markedly good results. In this case there was a diphtheritic-looking condition of the vagina near its outlet, and the microscope showed a far larger number of micrococci than usual. Salicylic acid in glycerine applied on salicylic wool was again employed to keep the abraded surfaces of the vagina apart. This dressing proved suitable, and the patient ultimately did quite well.

There was one marked case of perimetritis. This patient had had a first stage lasting over fifty hours. The delivery, however, was natural. The patient's condition gave rise to grave anxiety for about a week, but after this she rapidly improved.

Perineal Laceration.—In all those operated upon silkworm-gut sutures were employed, a small sponge being previously passed into the vagina to prevent blood from coming between the raw surfaces. Among multiparæ there were six cases of perineal laceration. In one of these it was due to the yielding of an old cicatrix. In three of the six cases silkworm-gut stitches had to be inserted. In all six

NORMAL TEMPERATURE CHART AND PULSE RATE OF THE PUERPERIUM, AS CALCULATED FROM THIRTY SELECTED CASES.



		I	II	III	IV	V	VI	VII	VIII	IX	X
Pulse	M	67·7	74·9	72·1	73·9	71·5	74·4	74·06	74·6	74·5	74·2
	E	69·9	73·5	79·03	75	75·8	72·2	74·4	72·7	70·9	70·7

cases healing was satisfactory. Among primiparæ there were 11 cases. In four no stitches were needed, and all healed well. In seven cases stitches were required. In one of these—the case of sloughing of the vagina above referred to—there was no healing whatever; in another case there was only partial healing; while in the remaining five there were firm cicatrices, and the stitches were removed on the eighth or ninth day.

Percentage of Lacerations.—Multiparæ, 30 per cent.; primiparæ, $30\frac{5}{9}$ per cent.

Infant Mortality.—One child died as a result of delivery in the severe forceps case above alluded to. Another premature infant died of hæmophilia within 48 hours of its birth, bleeding from the roof of its mouth, from between two of its fingers, and from the circumference of its navel. One premature infant died two hours after birth. One premature infant born on the doorstep of the Hospital died, and four children were born putrid.

High Temperatures.—The highest temperature registered was 105°. This was in the severe case of stinking lochia already alluded to. Out of the 57 cases treated in the house there were only 7 who had not at some period of their puerperium a temperature of 100° or over, and only 16 who had not during the same time a temperature of 101° or over; 9 had temperatures of 104° or over; 18 of 103° or over. 105° was registered once in the morning and once in the evening in different patients. A comparative average of temperatures in the upper and lower wards yielded negative results.

An attempt was made in the following manner to ascertain the normal temperature chart during childbed. The cases that were abnormal were in the first place excluded, then every case that was the least doubtful. There remained of the 55 cases only 30. The observed temperatures of these 30 cases were then added together, both for the morning and the evening of each day, and these amounts divided by 30. This was done for ten days after delivery. The average temperature thus obtained is noted accurately in the accompanying chart. It will be seen that the temperature begins nearly normal; that for the first week there is a distinct tendency to subnormal temperature in the morning; that from the third to the seventh day there is a tendency to slight rise in the evening, the greatest elevation being on the third day, when the average temperature of 99°·5 is attained. After the seventh day the chart is practically a normal one.

The average pulse-rate in the 30 cases was also taken, and is given, both for morning and evening. It will be noticed that the law of slow pulse during the lying-in period is well borne out by the generally low average rate. But it is also interesting to notice how pulse and temperature vary together. Thus the highest pulse-rate—79·03—coincides with the highest temperature—99°·5—on the evening of the third day.

Note on the Presence of Sugar and of Albumen in the Urine of the Lying-in Woman.

During the last three months on which I was on duty at the Royal Maternity and Simpson Memorial Hospital I caused careful observations to be made on the urines of certain patients in regard to the much-vexed questions of albumen and sugar. The urine which was examined was all obtained after catheterization, so that the possibility of any elements from the genital passage getting mixed with the urine was thereby completely excluded.

Sugar.—In 35 cases tested for sugar it was found present at some time or other during the puerperium in all of them; 34 of the 35 cases were consecutive. The amount of sugar varied from 1 to 8 per cent. There was not, as in diabetes, an increased quantity of urine accompanying the sugar.

We failed to discover any direct connexion between tension in the mammary glands and the presence of sugar in the urine, as insisted upon by Hempel, *Archiv für Gynäk.*, Bd. viii. S. 312.

The testing was most carefully performed by my house-surgeons, Messrs Wells and Hodsdon. The following is an account of the various methods followed in order to secure accuracy. The results clearly prove that during the puerperium, from some cause or other, the woman's urine contains as a rule an abnormal amount of sugar.

Moore's Test.—Caustic potash and boiling, only used occasionally, not being very accurate.

Trommer's Test.—Sulphate of copper and caustic potash, used occasionally, the most usual test being,—

Pavy's solution, consisting of—

Cupric sulphate, . . .	grs. 320.
Neutral potassic tartrate, . .	„ 640.
Caustic potash, ...	„ 1280.
Distilled water, ...	℥xx.

This is boiled with the suspected urine, when, if sugar be present, the yellow precipitate of suboxide of copper seen in Trommer's test appears.

Piffard's cupro-potassic paste was used at times, but not found to act so well as Pavy's solution.

Bœtger's bismuth test was used when the urine contained no albumen. This is an excellent and delicate test. When albumen was present a modification of the above test was employed, known as Frohn's reagent. This is prepared as follows:—1·5 gram freshly precipitated basic bismuth nitrate is added to 20 grams of water and heated to boiling; then 7 grams potash iodide and 20 drops of hydrochloric acid are added. The reagent, which is orange-red, is added in small quantity to the suspected urine, when an orange-coloured flaky precipitate results. The mixture is then filtered and concentrated caustic potash added, when the colour disappears.

The solution is then boiled, when, if sugar be present, a gray or black colour results in the form of a flaky precipitate, the colour varying with the amount of sugar present. This is an excellent test.

To corroborate these tests the fermentation test was occasionally used.

Albumen.—Some of the observations in regard to albumen were vitiated by misunderstanding on the part of the nurses as to the necessity of, on all occasions, using a catheter in obtaining the urine. Every doubtful case was accordingly discarded; and after this had been done there remained 21 accurately observed cases. Of these 21 cases 15 presented albumen in their urine, or 71·4 per cent. of the cases. Of these 15 cases the amount of albumen present was only a slight trace in 5 of them. In some of the cases it amounted to one-third the bulk of the urine. In none of these albuminous cases could the strictest microscopic examination detect any renal tube-cast or other evidence of kidney disease. In none of these cases was there any indication of eclampsia.

The inference I am inclined to draw from such observations coincides with what I have long entertained as a fixed belief, and is that we should not be unduly alarmed at the appearance of a small amount, or even of a considerable amount, of albumen in the pregnant or lying-in woman's urine, provided we are able to prove that there is no structural involvement of the kidney; that, in fact, not so much the amount of the albumen as its causation ought to concern us or make us anxious.

Dr J. Carmichael congratulated the President on his admirably drawn up report, and on the result of his quarter's incumbency. He thought these successful results might be ascribed reasonably to the precautions as to after management, especially to the modified antiseptic treatment adopted. He thought, indeed, this system might be further developed. As to uterine and vaginal injections, he was strongly opposed to their routine use in private practice in natural cases. He should employ them in operative cases, or where there was marked fœtor. He hoped good results would continue in future reports.

Dr Bruce pointed out that the mortality statistics in dispensary practice were fallacious. He remembered being called to see a female, delivered by a dispensary student, who left off visiting her without any reason except that he could not attend any longer. This was a decided case of puerperal fever, which terminated fatally. It would have been interesting to know what report the student gave concerning the case.

Dr J. Milne Chapman mentioned that in the Prague Lying-in Hospital antiseptic precautions were carefully used, and the maternal mortality was only 13 per 1000.

IV. *The President* then read his paper on

TWO CASES OF CHRONIC INVERSION OF THE UTERUS.

This lesion is not a common one. In the course of seventeen years' practice I have only had charge of three such cases. I have seen one or two others under the care of Dr J. M. Duncan; but this forms all my experience of the kind.

The subjects of the present paper came respectively from Inverness and Mid-Lothian. In both cases the accident was not detected for some time after delivery, and in both there would appear to have been a great absence of the alarming symptoms of shock which usually accompany the acute lesion. Believing that a relation of the cases, which are typical each in its own way, and differ widely in almost every point, would interest the Society, I have taken the liberty to lay them before you.

Case I.—*Complete Inversion of Seven Months' Standing. Forcible Reposition after Three Attempts. Complete Recovery.*

This patient was recommended to my care from Inverness by two medical friends there who had seen the case, diagnosed the lesion, but failed in a first attempt to reduce the inversion.

The particulars, as given by the patient's friends, are as follows:—The patient, æt. 22, was married on the 10th of June 1878, and was confined of her first child, a well-formed female, after an illness of 48 hours, on the 7th of February 1880. The delivery was natural, and the head presented. The afterbirth was removed early by introduction of the hand. This was followed by considerable bleeding, much pain, and faintness. The medical attendant stayed by his patient till 8 A.M. on the following morning. On the evening of the 8th the nurse perceived something come outside, and sent for the doctor. The latter pushed up the tumour within the vagina, and much bleeding and depression followed this procedure. The patient gradually recovered, and on the 22d of June proceeded to Inverness, intending to go daily to the Nairn Hotel for salt-water baths.

The bleeding came on so severely when she went to Inverness that she was led to consult a medical gentleman there. He examined the patient, and explained to her that she suffered from inversion of the womb, and at the same time advised a consultation with a medical brother. The result was a complete agreement as to the nature of the lesion. The patient was then placed under chloroform, and an attempt made for an hour on end to replace the uterus. As there seemed no improvement after this effort, the patient was advised by these gentlemen to come to Edinburgh and place herself under my care.

I saw the patient first at 8 Forres Street on the 14th of July 1880. I found the uterus completely inverted, the patient pale and

anæmic; but as there was some tenderness still present on the left side of the vagina—the result, apparently, of the manipulations in Inverness—I delayed active interference till the 19th.

I first adjusted Tait's repositors, which were well borne, but proved utterly useless as a means to facilitate reduction of the displacement. Tait's repositors were continued till the 1st of August, when most severe and alarming hæmorrhage set in, which threatened the life of the patient and greatly aggravated her already advanced anæmia. The hæmorrhage ultimately yielded to internal astringents.

On the 22d of August, after the parts had been prepared by air pessary, the patient was placed under the influence of ether and chloroform, and with the aid of Drs Underhill, Playfair, and Elder I proceeded to attempt forcible reposition of the organ.

Counter-pressure was made upon the abdomen by an assistant, whilst Dr Underhill and myself by turns endeavoured to push up the uterus through the stricture. After continuing our efforts for three and a half hours, we began to fear lest the patient should collapse, and desisted. We used the hands only. The vagina tore somewhat posteriorly at the inlet. The perineum remained intact. After the operation the profuse sero-sanguineous discharge stopped. The patient complained of very little pain, and there was no fever and no vomiting, and indeed our patient seemed all the better of the operative manipulations. On examination I found that for several days the body and fundus remained above the level of the external os uteri, thus showing that our attempts at reduction had produced a certain effect. Accordingly, though my first impulse after failure of so prolonged a *séance* was to amputate the uterus, I now changed my mind and resolved to make another attempt at replacement. Accordingly, on the 4th of September, with the assistance of Drs Underhill, Elder, and Turner—Dr Playfair having gone to the country in the interval—I again proceeded to the operation.

After Dr Underhill and myself had made several efforts at reduction with the hand alone, I took the repositor shown, and, using first the broad end and then the narrow, completed the reinversion in a few minutes. On this occasion, from the commencement of administering the chloroform to the complete reposition of the uterus was only one and a half hours. The uterus, without any internal support, kept its place well, and on the 18th of September, when the patient left for her home in the country, it felt normal in situation, only slightly tender. The cervix was well contracted, except at the sides, where it gaped slightly as if somewhat notched.

I am now able to state further that the patient continued to improve, and that she expects to be confined in the middle of August next.

Turning from this extremely satisfactory record, we pass to

another which, though partially successful, is at the same time disappointing.

CASE II.—*Chronic Inversion of Five and a Half Years' Standing. Repeated Attempts at Reposition unsuccessful. Rupture of Posterior Wall of Cervix; Passage of Uterus into Peritoneal Cavity. Amputation of Uterus. Recovery.*

Mrs B., æt. 32, married, was admitted into Ward 28, Royal Infirmary, on the 4th of April 1881.

The patient complained of a falling-down of the womb, which frequently projected beyond the vulva, and, indeed, seldom was up for three days at a time, always reappearing on the slightest exertion. Besides this, the patient suffered from severe hæmorrhage from time to time, and from great pain and down-dragging, so that she was barely able to move about.

The patient was confined in the country some five and a half years ago. That delivery was followed by much bleeding, which lasted for three weeks. Convalescence was tedious and incomplete. Three or four months subsequently she found that on attempting to leave her bed the womb constantly protruded, and ever since she has continued in the condition mentioned on admission.

About nine months after her confinement she came under Dr J. Playfair's charge, and he asked me to see her with him. We on two occasions, at an interval of six or seven months, attempted forcible reduction under chloroform, but unsuccessfully. On both occasions we gave a long preliminary trial to the air pessary.

As the bleeding considerably abated after the second effort, and the patient improved in health, we did not deem ourselves warranted in strongly urging amputation, but contented ourselves with merely explaining the nature of the operation and its risks. As the patient then declined to submit to this suggestion, we lost sight of her till the end of last year, when we found her anæmic and suffering so much that she was willing to acquiesce in any procedure which promised her relief. Accordingly she was admitted, as above mentioned, into the private ward attached to Ward 28.

It may be stated that the patient on that occasion was noticed to be very anæmic, of short stature, stout build, with long bones thickened at their extremities; limbs somewhat bent, as if she had suffered from rickets in early life. Temperature normal, and other organs healthy.

On examination per vaginam the uterus was found absent from its proper place, and the vagina occupied by a soft pear-shaped structure, about 2½ inches long, which protruded through the outer os, but when the patient was lying in bed did not appear externally. This tumour bled very readily when touched, and manipulating it caused the patient considerable pain. The finger could be passed all round its base, between the upper end of the tumour and the cavity of the cervix uteri, to about the extent of

an inch; but by finger and sound it was demonstrated that all round the base of the tumour the open space between it and the cervix ended in a *cul-de-sac*. It was thus demonstrated that the tumour projecting into the vagina was the inverted body and fundus uteri, and also that the cervix, as happens usually in such cases, was not inverted, but continued in its normal position, only that it was very widely dilated. As the uterus was very soft and considerably swollen, we at first ordered quiet and then hot-water douche twice daily.

On the 20th of April the patient began to menstruate. The quantity was very profuse.

On the 5th of May menstruation ceased. The lower left angle of the uterus was noticed to be somewhat ulcerated. The douche was recommenced, which considerably reduced the bulk of the tumour.

On 9th May, the patient being anæsthetized with ether and chloroform, with assistance of Dr Underhill and other friends, I proceeded to attempt forcible reduction. This was persisted in for one and three-quarter hours, partly by means of the hand, partly by help of the repositor shown; but no change was effected on the tumour other than flattening of its base. It was especially noticed by me that whereas in Case I., after manipulating for a time, there was developed a tendency in the fundus, with deep pressure, to become slightly invaginated, in the present case no amount of pressure could produce an appreciable amount of invagination at the fundus. During this operation the left side of the vagina tore obliquely for about two inches. This was secured by three silver stitches, which were removed on the 18th of May, when the wound was found completely healed. The patient recovered well from this operation. There was considerable bleeding during the operation, but none after it.

On the 29th of May another effort was made to replace the uterus. After half an hour, whilst I was pressing up with the repositor, and Dr Underhill exerting counter-pressure on the abdomen, I felt as if the constriction slowly yielded and the uterus became re-inverted. There was no slip of the instrument, no sense of sudden giving way of parts, as in the case of rupture, so that I was so completely misled as to use the small end of the repositor to complete the operation after pushing up the uterus as far as the large end could carry it. To my great disappointment, I found on examining that the uterus had passed through a longitudinal tear in the back wall of the cervix, and was now, indeed, in the abdominal cavity. This fact was confirmed by Dr Underhill on examination.

I now proceeded to remove the uterus from its unfortunate position. This was no easy task; for though the aperture in the peritoneum had been large enough to admit of the uterus being slowly pushed through it, considerable resistance was offered by it

to the removal of the uterus back again through it. Fortunately no large portion of intestine came in the way, and after considerable difficulty I was able to fix the uterus in the grasp of one or two powerful volsellæ, and in that way bring it back into the vagina. That being accomplished, my first concern was to sew up the rent in the cervix and peritoneum. This was done by means of three twisted silver wire sutures, which were cut as short as was considered consistent with maintenance of their hold. The question now presented was, what could be done with the uterus? On trying to invert it with the aid of a finger passed through the lower part of the rent, we found its tissue was so friable that it tore up like wash-leather.

The tissue of the organ was further considerably lacerated by the application of the volsellæ. To leave the uterus dangling in the vagina in its lacerated condition seemed not unlikely to lead to gangrene of the parts, or at least to peritonitis. Besides, though these risks were not to supervene, the patient, in case of recovery, would have been quite as badly off as when she came in to us, and, moreover, had been subjected to two serious operations. It was idle to anticipate being ever able to replace the uterus, as we found that it was both too thick and too lacerable to admit of such. The only means by which complete relief of symptoms could be afforded was clearly amputation. This I resolved to perform at once. A wire ecraseur was passed round the tumour as near as possible at the junction of the cervix with the body, and the muscular tissue nearly all separated in that way; but before we had completed the separation the instrument broke. I was accordingly compelled to complete the amputation with scissors. I divided first the end of one broad ligament, and then another. In connexion with each of these a vessel was found nearly as large as the radial artery, so far as one could judge from feel and from the hæmorrhage. Knowing how difficult it is to secure such vessels by ordinary ligature in a muscular organ, and, besides, knowing that, owing to retraction of the separated broad ligaments, fatal bleeding into the peritoneal cavity had occurred from the Fallopian tube in a case recorded by Dr J. M. Duncan, I adopted a method of arresting the hæmorrhage which at the same time stopped bleeding from the tube and prevented the cut ends of the ligament retracting. This method was to pass a needle carrying a silver wire from the vaginal aspect of the inverted cervix to the peritoneal aspect and bring it back again in such a way as to include the vessel and the end of the Fallopian tube in the loop. This was now carefully twisted tight and cut rather short. The other Fallopian tube and its artery were treated in the same fashion, except that I used two wires instead of one, as I was not so well satisfied as in the other case, after I had tied the first, that I had effectually controlled the hæmorrhage. A drainage-tube was now passed through the cavity of the cervix and fixed in position by a

stitch passed through the left labium pudendæ, and the patient was put to rest after receiving a brandy enema.

There was positively no hæmorrhage. There was a little, but not much, tenderness complained of in the lower part of the abdomen, but no distention. The vagina and cavity of the cervix were carefully washed out with disinfectant solutions several times a day. The temperature ranged from 100° in the morning to 101° in the evening, with the exception of one occasion, when it went up to 105°. The discharge from the vagina was very slight.

On the 7th June the ward-book contains the statement that the temperature was normal. The tube was found loose on that day and was removed, as were also the three wire stitches which had been passed through the cervix to control the hæmorrhage. The stitches put into the peritoneal wound could not be felt.

The following is the note of her condition on 26th June:—The patient feels quite well. Her temperature continues normal. Examination per vaginam reveals the stump as a somewhat patulous os. Inversion of the cervix has not taken place. No intra-pelvic effusion can be felt. The line of the cicatrix in the peritoneal tear can be felt, but the most careful exploration cannot detect any sutures.

In further considering the subject it may be advantageous to refer briefly to the—1. Causation; 2. Symptoms; 3. Diagnosis; 4. Prognosis; and 5. Treatment of this lesion.

1. *Causation.*—It is usually an accident occurring at delivery, as in the two cases referred to. When this happens, as pointed out by Dr J. M. Duncan, there are at least four possible ways in which it may occur. Undoubtedly, in relation to its causation, the uterus may be passive, or it may be active; that is to say, the uterus may be in a condition of collapse, or may be actively contracted during the descent.

1*st.* The non-contracted uterus may tumble out of its own accord in obedience to gravitation or bearing-down effort. This forms what is called the spontaneous passive variety.

2*d.* The non-contracted uterus may be pulled out by nurse or doctor in the removal of the placenta, or in consequence of too short a cord, or otherwise. This constitutes the artificial passive variety.

3*d.* The uterus, all except the area on which the placenta is situated or a fibroid is attached, may be powerfully contracted, and thus the organ may turn itself outside in by a wave of contraction passing along its body. This forms the spontaneous active variety.

4*th.* The accoucheur or nurse, by traction on the placental area, may invaginate it and begin the inversion. The uterus, treating the inverted placental area and placenta as a foreign body, contracts firmly round its base; that wave passes rapidly over the whole

uterus until the whole organ is inverted. This forms the artificial active variety.

But, in addition to cases arising at term, a certain proportion of others follow abortion, whilst some originate in the unimpregnated condition through the influence of polypi or other tumours. With such cases, however, I have no personal acquaintance, and therefore do not stay to consider them.

2. *The Symptoms* of chronic inversion of the uterus are various. The principal are, profuse menorrhagia, pain, and down-dragging. When there is not a profuse discharge of blood, the patient is usually tormented with a sero-sanguineous discharge from the vagina which continuously saps her strength. As a result of the menorrhagia and leucorrhœa, the patient gradually becomes pale, anæmic, and weak, with a distinct tendency to œdema of the more dependent parts. Life is a burden, duty becomes a toil, and the woman, in short, is supremely miserable. In some cases the uterus comes to protrude outside the woman's body, and the irritation to it thereby occasioned adds greatly to her other misfortunes. In most cases, on the first oncome of the accident, there is much pain, alarming hæmorrhage, and shock. In the cases I record these symptoms, though not entirely, are certainly largely absent.

3. *Diagnosis.*—No careful gynæcologist would risk a diagnosis on symptoms alone. A physical examination is necessary. In this connexion it is important to point out, with all the emphasis one can summon, the danger of confounding this lesion with intra-uterine polypus. This has been frequently done, and by practitioners of wide experience and great ability. Indeed, I have never yet shown a case of inversion for the first time to any gentleman who did not think it must be a polypus. That being so, it is of importance to insist, "line upon line, precept upon precept," that this danger has to be feared and obviated. It is not difficult to establish a correct diagnosis; but it needs care and attention. The means of arriving at certainty have been again and again pointed out; still I must be pardoned for recapitulating them.

First, The vagina is occupied by a rounded or pear-shaped body about 2½ inches in length, which, when the patient is laid on her back, does not protrude beyond the vulva, but is completely contained within the vagina. This rounded or elongated body projects through the cervix, which is *widely dilated*, like an intra-uterine polypus. The tumour, when touched, bleeds very readily, and, I should point out also, is more or less sensitive when touched or pricked, whilst a polypus is not. Frequently manipulation produces contraction in the uterus, which makes it rounder and harder. Then the finger or sound can get to the reflexion of the body of the uterus from the upper end of the cervix all round, and find the way impeded by that reflexion, so that a sound can nowhere pass over an inch. If at any point the sound passes 2½ inches or

more, the conclusion is tolerably certain that we have got to deal with a polypus.

By double manipulation, with the aid of chloroform and of sound in the bladder if necessary, the uterus may be proved to be absent from its normal situation, as the finger in the posterior vaginal arch or in the rectum may be usually brought to meet that in the abdomen over the base of the tumour, bringing out in that way that the uterus is absent and that the upper part of the tumour is cup-shaped. If need be, this manœuvre may be aided by dragging down the uterus with the hand or with the assistance of a volsella, but the hand is usually sufficient for this purpose. When this is done it is easy to make out the cup-shaped upper part of the tumour and the absence of the uterus from its proper situation. The finger passed into the rectum now enters easily into the cup at the upper end of the tumour.

A good deal of the tendency to error in diagnosis as well as in treatment of this lesion depends upon the persistence of erroneous views as to the ordinary condition of the cervix and the site of stricture in regard to this lesion.

It is constantly *assumed* by the inexperienced in these matters that the cervix is inverted along with the rest of the uterus; and accordingly, when they find a gaping cervix surrounding the base of an ovoid tumour which occupies the upper part of the vagina and projects from the gaping cervix, they at once jump to the conclusion that this must be an intra-uterine polypus. Now, it ought to be known that the cervix uteri seldom or never partakes in the inversion of the organ. The body and fundus are inverted, but the inversion ceases at the inner os. The cervix maintains its normal position, is wide and patulous, so that there is seldom any difficulty in crowding the entire inverted body and fundus into its cavity so that the fundus is above the outer os.

The greatest difficulty is experienced in dilating that part of the body which would naturally have been immediately above the inner os, but which in this case is, of course, situated immediately below it. It is here that that stricture takes place, and it is here that the great difficulty of reposition is experienced. It is easy enough to invert the cervix by dragging down the uterus, when the whole organ becomes completely inverted; but when the uterus is pushed back, it is found that the cervix at once becomes reinverted.

It is lamentable to find how, even in the best and latest text-books, such as Courty's, this old error in regard to the cervix is retained. At page 727 of the last edition of his *Traité Pratique des Maladie de l'uterus*, etc., Courty says, "Dans l'inversion complète et chronique, les vrais obstacles à la redúction sont, la contraction et la dureté du tissu utérin, la constriction et la rigidité du col, la mobilité de l'utérus, et surtout le défaut de fixité du col."

The true state of matters is ably pointed out by Dr J. M. Duncan in his paper on "Inversion of the Uterus," *Edinburgh Medical Journal*, page 769, March 1877. In all the cases observed by me, certainly there was no stricture in any part of the cervix, which was large and patulous throughout. The stricture was always experienced in that part of the body immediately beyond the cervix, and seemed due to the advance of the normal involution. All talk, therefore, of facilitating reduction by notching the cervix is wrong and misleading.

4. *Prognosis.*—The anticipation of health with chronic inversion is bad in the extreme. The patient is rendered sterile, she is unable to perform her conjugal duties, she is constantly tormented by down-bearing pains, is perpetually exposed to attacks of menorrhagia, which alternate with profuse thin sero-sanguineous discharges.

In the first of my two cases the hæmorrhage was so intense at the menstruation immediately before the operation that the patient must have succumbed to one or two similar attacks if she had not been relieved. The patient, before I saw her first, was reduced very greatly in strength through the resulting anæmia.

The second case was that of a more vigorous woman. The bleeding in her case was not so severe, yet sufficient to maintain her in a condition of great anæmia, and the pain and distress were so great as to make her anxious to submit to any proposal for relief of her sufferings. With the menopause relief from hæmorrhage comes usually, although, according to Courty,[1] not always.

A few cases of spontaneous reinversion of the uterus are recorded. One undoubted case is given by Spiegelberg (*Archiv für Gynäkologie*, Bd. v. S. 118), after it had been down three months. Several cases are contained in Crosse's great work. Others are mentioned by Meigs, Halch, Rendershaw, in which inversions which had lasted from a few hours to many months spontaneously rectified themselves. There is considerable looseness of statement in the cases, however, with the exception of that of Thatcher and Barre, which lead one to be very cautious in accepting the conclusions arrived at, although, from the nature of the case, they cannot be regarded as incredible. This result is, however, so extremely rare as to be entirely beyond consideration in the matter of prognosis.

It is strange that seldom or never any portion of bowel is met with in the cavity of the inverted uterus, and that adhesions between the opposing peritoneal surfaces are so uncommon. It will be noticed that notwithstanding the frequent attempts at reposition to which Mrs B.'s uterus was subjected, there was not a trace of adhesion between the opposing peritoneal surfaces, nor any trace of plastic lymph thrown out upon them. This is pointed

[1] *Loc. cit.*, p. 721.

out by Spiegelberg in the account of two cases of amputation by elastic ligature lately recorded by him. Even after this slow method of amputation the peritoneum remained free from inflammatory action. The fear of strangulation of intestine or the fear of injury to bowel in a case of amputation is, therefore, slight in the extreme.

The results that may be expected from treatment are, on the whole, good, but not nearly so good as some authors, such as Emmett, would lead us to expect. It is perfectly comical to notice this author in his work, pages 435–438, asserting magniloquently that no chronic inversion ought to be given up, when of four cases recorded by him he himself only managed to reduce one. It will be noticed that one was reduced by Dr Thomas, another by Dr Nöggerath, and a third he failed to reduce, and contented himself with sewing it into the cervical cavity and leaving it there.

I have examined the literature of attempted replacements of the inverted uterus with some care. I need not give the names, as that would lead us too far; but the cases are collected from all sources I could find. They include the practice of continental, American, and British gynæcologists, so far as one could gather from reports in journals.

The cases of chronic inversion so collected amount to 66 in number. Of these 66 cases 22 were failures,—that is, they either could not be reduced or the patients died a few hours or days subsequently to the reduction,—and 44 were successes. There were thus 33·3 per cent. of failures and 66·6 per cent. of successes.

I have purposely avoided saying anything regarding the results of acute inversion. That is no part of my present theme. It may be mentioned in passing that the immediate risks from shock, bleeding, gangrene, etc., are very great indeed, and lead, as pointed out by Crosse[1] and others, to a fearful mortality. Thus Crosse states that of 109 patients whose histories he was able to gather, afflicted with inversion, 72 died a few hours after delivery, 8 before the end of a week, and six within a month.

Treatment.—When we proceed to consider this head we encounter no end of proposals. But they are all capable of being grouped under two heads:—

1. Methods of replacement.
2. Methods of amputation.

For long it was deemed impossible to replace a chronically inverted uterus by any means, and such women as became victims of the accident at delivery and outlived its direct consequences without the uterus being immediately replaced were abandoned to their fate.

Dr White of Buffalo (*American Journal of Medical Sciences*, vol. xxxvi., 1858, page 13), by the record of his experience in a case in which the uterus had been down seven days, and another in

[1] *Transactions of the Prov. Med. and Surg. Association*, vol. xv. p. 340, 1847.

which the uterus had been down for five months, was perhaps the first to give a decided impulse in the direction of attempting the systematical reduction of the chronically inverted uterus. One or two others in Europe had succeeded in reducing chronic inversion before White, for Valentin (*Revue Médicale Chirurgicale*, 1847) records a case successfully reduced by him after sixteen months; Bassier of Lyons (*Archives Générales de Médecine*, 1852) another after eighteen months; and Canney of Bishop Auckland, England (*Medical Times*, vol. ii., 1852), one of five months; and it would appear that in America even White was preceded by Quackenbusch. Still the record of White's cases and method appears to have been the starting-point in this mode of treatment, and to have encouraged gynæcologists to persist much more than they had been wont in efforts at forcible reduction in chronic cases.

Since that time numerous methods have been proposed for fixing the uterus and directing the force for reposition. Many of these methods scarcely deserve the name of special methods. The essentials of a good method are one that is safe, that gives proper support to the cervix and pelvic attachments of the uterus, and that tends to dilate the constricted part, viz., that portion of the uterine body abutting upon the inner os. The one hand of the operator in the vagina, pushing up the fundus, and the other hand steadying the cervix and endeavouring to dilate as far as possible the cup-shaped stricture formed by the base of the tumour, is perhaps the safest, if not also the most successful method. It needs perseverance and patience. An air pessary such as the one shown, introduced into the vagina, and then dilated and left there, is a good preparation, and makes the vagina roomy, thus facilitating the manipulations of the hand which is pressing up. The want of room compels it always to act at great mechanical disadvantage. Only a small amount of the operator's force is utilized. Besides, the hand is constantly getting cramped in its constrained position, which still further tends to impede progress. This plan was originated by Dr Tyler Smith, and in his case was successful in reducing a case of twelve years' standing. It has been also successful in some other cases, such as those of Teale,[1] West,[2] Backenthal,[3] Courty,[4] Schrœder,[5] Grassi,[6] and A. C. Tyler.[7] But it is not without danger. In one case recorded by West it led to fatal peritonitis.

I tried it thoroughly in both the cases I have here recorded, and in another which I have as yet failed to reduce. But it had no appreciable effect as a repositor. Latterly I merely employed

[1] *Medical Times*, August 1859.
[2] Duncan and West, p. 228.
[3] *Zeitschrift für Geburtskunde*, Bd. xv. S. 313.
[4] *Annales de Gynecologie*, October 1878.
[5] *Berliner Klinische Wochenschrift*, 1868, No. 46.
[6] *Centralblatt für Gynäkologie*, 1877, No. 12. This case was only partially inverted, and ended fatally.
[7] *American Journal of Obstetrics*, p. 578, 1878.

it to give space in the vagina as a preparation for operation. It has one unfortunate peculiarity—the patients simply abhor it. One after another have told me they would submit to anything rather than the bag because the distress it occasioned was all but unbearable.

Courty lays much stress upon a method adopted by him in a successful case. This consisted in pulling the uterus well down outside the vulva, and getting the fingers hooked through the rectum into the cup-shaped hollow at its base. By this means he was able to maintain by the rectal hand good counter-extension, whilst the rectal finger favoured dilatation of the stricture. I have tried it often, and cannot see the advantage in it which its author claims. Nöggerath of New York made the suggestion of endeavouring to reinvert by indenting the uterus at the opening of one or other of the Fallopian tubes, where, according to the conical development of the muscular fibre, it might be expected to be more easily invaginated. It appears an excellent suggestion, and, so far as I can make out, is likely to be very valuable in cases immediately after delivery, but it would appear of little advantage in chronic cases. Cup-shaped repositors to aid in inversion are very numerous.

The one shown is as good as any other, I believe, but they all need care in their application. I completed the reduction of my first one with this instrument. It is simply a straight rod of wood, the ends of which are expanded into two cups of different sizes. The larger is intended to aid in the inversion until the fundus is about as high as the inner os, and the smaller one is meant to complete the operation, as it can pass through the inner os. It is not to be forgotten that such an instrument may be dangerous, even though we had not the record of my second case to enforce that lesson. White originally used a rectal bougie to aid in pushing up the fundus. A repositor with a cup-shaped extremity and a pelvic curve, successfully applied to the inverted organ by Dr Aveling by means of elastic pressure, is figured in volume xx., page 126, of *Transactions of the London Obstetrical Society*. Repositors have been made to be applied by pressure communicated from the operator's breast, with spiral stems, so as to avoid putting forth undue force.

The necessity for using first a larger and then a smaller cup has been attempted to be obviated by having a movable bottom in the repositor, which at the same time is provided with an apparatus for exerting counter-extension. This repositor is applied so that the fundus uteri is received into the cup, whilst the other end is applied to the upper end of the uterus, and then the larger cup is made by suitable mechanical screw arrangements to push up the fundus as far as it can. After that object is effected, while it maintains its position, the movable bottom is propelled onwards to complete the reduction. This certainly is an ingenious method,

and is the offspring of Dr Byrne of Brooklyn (*New York Medical Journal*, October 1878), but to any one who has had experience of such matters many practical difficulties as to application and otherwise suggest themselves. This instrument is reported as having been successful in two cases.

Mr Lawson Tait (*Obstetrical Journal*, vol. vi., p. 555) proposed a series of repositors, which I show you. His idea is a good one. It is to apply cups of successively diminishing size to the fundus uteri, in order to tire out the muscular resistance by small but continuous amounts of elastic pressure. I procured them, and tried them faithfully in two cases. You will notice that the cup of the stem is applied over the fundus uteri, that there are holes in the stems through which elastic bands can pass, and that these are attached before and behind to a belt passed round the woman's belly. They are easily applied, they are well borne, and they are theoretically correct. But practically, even where used with rubber bands much stronger than those which Mr Lawson Tait recommends, they are positively useless. In my experience they did no good, although I must in justice state, also, they did no harm. I was the more disappointed in this inasmuch as I undertook their application with high hopes, as the theory is so excellent. Mr Tait found his repositors successful in one case of ten weeks' standing. Dr Matthews Duncan, in one case, was bold enough to incise longitudinally the muscular tissues of the upper part of the body of the uterus, which is the part that gives, as I have already explained, the greatest resistance. This patient did well, and, to my knowledge, has since been delivered safely.

Dr Barnes,[1] apparently believing that he incised the cervix, records a successful case which was essentially the same, to my reading. It would appear that Dr Barnes began his incision in the muscular tissue of the cervix, but that as he attempted to invert the uterus the muscular tissue tore into the lower part of the body, and that he was thus successful. The same is true of the case of Dr Wilson, Greenock (*Lancet*, 23d June 1877).

I have thus drawn attention to the leading adjuncts to the forcible reposition of the uterus. I am fully persuaded that the best method of operating is:—

1*st*. To prepare the parts well with the air pessary, but not to continue that too long, on account of the danger of irritation it may set up, and the pain and distress it occasions. This may succeed alone—it has on many occasions.

2*d*. But if this method fails, after having the patient well anæsthetized, efforts should be made, prolonged and steady, by manual pressure from the vagina and counter-pressure from the abdomen, to reduce the organ. The counter-pressure may be made by an assistant, who may also endeavour to flatten out the cup by

[1] *Medico-Chirurgical Transactions*, vol. lii. p. 193.

pressing on the outer sides of it. The reducing pressure, it appears to me, should be made on the fundus, after it has been well squeezed, so as to force out as much as possible of the blood it contains, to reduce its bulk as far as possible. These efforts are to be prolonged until the uterus is reduced or until the patient's condition compels us to desist. It is perfectly astonishing how little reaction usually follows such an operation. If the uterus stretches and the fundus is easily indented, the case may be looked upon as favourable.

3*d*. A repositor may be used cautiously to complete the operation. It enables the operator to economize his force, as his hand cannot be applied advantageously in a mechanical point of view. But much care must be employed to avoid exerting too much force, and to make certain that the counter-pressure is perfect. Even under deep anæsthesia, counter-pressure is much more easily effected in some cases than in others.

In the second case recorded by me I cannot help feeling that too great force exerted through the repositor, with perhaps imperfect counter-pressure, may have led to the rupture. Still, the longitudinal direction of the tear being in line with, and not at right angles to, the direction of pressure, would rather indicate that the tear was due, partly at least, to a natural deficiency of tissue. But my second case bears the strongest evidence in support of the contention that all inversions are not capable of forcible reposition.

Any one who looks at the thickness of the chronically inflamed fundus and examines the friability of its tissues will, I feel assured, at once allow that no amount of force would have pushed this mass safely through the constricted body. In the act of reinversion it seems to me that the fundus must have torn asunder, even had we been able to pass it through the lower part of the body.

In those cases in which, after a fair amount of well-directed effort has been employed with hand or repositor or both, and the only result is flattening of the base of the tumour without appreciable ascent of it, I am of opinion that the operator is bound to consider very carefully how long he should continue in his efforts at forcible reduction.

Amputation of the Uterus.—In case of failure to replace inverted uterus, if the symptoms dependent upon the lesion are of a threatening character, the only means to secure permanent relief is amputation of the organ. This procedure doubtless mutilates the patient, and is in itself fraught with considerable risk. But we have to bear in mind that chronic inversion of the uterus, as a rule, gives rise to much annoyance, and it becomes a continual source of distress, whilst the accompanying hæmorrhage may at any time jeopardize the patient's existence. In those cases, however, which give rise to only a moderate amount of bleeding and little incon-

venience otherwise, it is not advisable to recommend amputation. Measures of a palliative nature should be employed, particularly rest at the periods, with ergot and astringent medicines, such as gallic acid. The leucorrhœa and uterine congestion are largely relieved by the hot douche. Iron in some form, as well as other tonics, are to be given between the periods.

The results of amputation are not so unsatisfactory as is usually held, however. At one time it was deemed an operation that could not be undertaken on any consideration. The record of reported cases does not show so specially bad statistics. Duncan and West, at p. 231, give a table of amputations of the uterus, of which 42 recovered, 15 died, whilst in two the operation had to be abandoned. This enumeration, as is evident from the accompanying bibliographical list, does not include a great many important recent cases, the bulk of which were successful. When those cases recently reported in the medical journals are added to the statistics of West and Duncan, we find 165 cases, of which 124 were successful and 41 ended fatally from amputation, giving a percentage of 24·8 failures.

The most imminent danger arises from the risk of the cervix becoming spontaneously reinverted. It will be recollected that I insisted in this paper that in ordinary circumstances the cervix uteri is not inverted in a case of chronic inversion of body and fundus. There is thus a marked tendency in this part to retain its natural position, even if the rest of the uterus is inverted.

At the moment of amputation the cervix is inverted along with the body and fundus as a result of the necessary downwards traction exerted upon the uterus to facilitate the operation. When the organ is amputated, the inverted cervix is at liberty to obey its own tendencies, and so is very apt to reinvert itself. But in so doing it carries with it the cut section into the abdominal cavity, and if that section is the site of any putrescent materials or sloughs, we are exceedingly apt to have peritonitis septica set up. It is important, then, if we cannot prevent reinversion of the stump, to take measures for draining its cavity, and also to adopt in amputation such a method as shall be least likely to carry septic matters into the peritoneal cavity.

But the next great danger is bleeding. That, I am satisfied, can be perfectly well guarded against with a little care in amputation. While I regard the ecraseur as sufficient for the arrest of the bleeding in the muscular wall, two arteries in relation to the two broad ligaments ought to be carefully secured, as also the ligaments themselves, by some such method as I adopted in my second case. I feel very strongly convinced that the use of the galvano-caustic wire or the Paquelin's cautery, or even the ligature, as they produce a great deal of dead tissue, add greatly to the risk of septic infection through inversion of the cervix, and that some modification of the knife and ecraseur will be found

ultimately the safest method of procedure. The danger of including a portion of intestine in the section is exceedingly slight, inasmuch as in cases of chronic inversion it is extremely rare to find any portion of the intestine in the cup of the uterus. I would therefore be inclined to recommend the use of the ecraseur down to the peritoneal coat. Then I should open the peritoneal sac and complete the amputation by scissors, taking care that the Fallopian tube is prevented from retracting, and the large vessels in relation to it prevented from bleeding, by firmly twisting a wire noose over it, as in my second case.

But many methods are used, and with varying success. M. Courty[1] and Spiegelberg[2] have both used the elastic ligature in two cases with success. The uterus falls off in the course of eight or ten days. M. Courty states also that one of his pupils successfully amputated a uterus by the same method. The galvano-caustic wire has also been used on various occasions. Spiegelberg, Veit, Nyrop[3] have each used this plan. In the case of the latter the patient nearly lost her life from pelvic suppuration. Courty, after trial of this method, expresses himself as averse to it. Good success has followed the ecraseur alone, especially in the hands of Drs Greenhalgh and Godson.[4] An ordinary stout ligature to transfix the stump and tie it in two halves has also been frequently employed. The stump is so thick that it is difficult to make certain that hæmorrhage shall be entirely absent, and, moreover, there is much tissue that is thereby killed, and great danger, therefore, of septic results in case the cervix becomes reinverted. Still we find some prefer one method, some another. The main points are, to avoid bleeding, to avoid entrance of putrescent matters into the peritoneum, and to disinfect thoroughly.

It is to be hoped that as we gain a better insight into the principles which regulate reposition of chronic inversion—and there must be some reason to explain why at one time a uterus is so easily reinverted compared with another—the necessity for amputation of the uterus will diminish more and more. It would almost appear from the history of repositions that the uterus passed through certain phases when it was very much more easily replaced than at other times. What these phases are, if they exist, and whether they have any relation to the menstrual period, is at present entirely unknown. Something must be discovered to explain how spontaneous reposition can occasionally occur in an organ that resists at another time the most vigorous efforts at forcible replacement. Then, again, we find a uterus that resisted hours of well-directed effort one day, next day replaceable by the gentlest manipulation. On other occasions the history of a chronic

[1] *Loc. cit.*, p. 738.
[2] *Archiv für Gynäkologie*, Bd. xvi. S. 233.
[3] *Centralblatt für Gynäkologie*, No. 13, 1877.
[4] *Transactions of London Obstetrical Society*, vol. xix. p. 51.

reposition shows that next to no resistance was offered by the organ to reposition. If we expect ever to be able to explain these points, we need the histories of every case carefully noted, and every point about them, however trivial, thoroughly encogitated. But this is work still in the future. In the meantime I bid good-bye to the subject, simply stating that in cases of uterine amputation satisfactory results can never be expected except the strictest measures are adopted to disinfect the vagina and stump, and to maintain free exit of any septic matter that may result from reinversion of the cervix.

Dr Hart thought Dr Macdonald deserved the hearty thanks of the Fellows for his very valuable cases. He regretted exceedingly that Professor Simpson was unavoidably detained, as his experience would have been instructive. He himself had seen two cases in Dr Simpson's practice. In one the patient refused interference. In the second, at present under observation, all means had been tried fruitlessly. Gradual reposition had failed, forcible reposition had failed, and finally, an attempt to replace it by bimanual manipulation after abdominal section according to Thomas's plan had also proved unavailable. The complication in Dr Macdonald's second case was a very awkward one, and he thought Dr Macdonald deserved special praise for the way in which he met it, and without any special preparation or selected instruments performed the unexpected amputation of the uterus with a perfectly successful result.

Dr Macdonald thanked the Fellows for their reception of his paper. It was necessary to bring such cases up, as practitioners were apt to err in diagnosis. He remembered the first case of the kind he saw with Dr Matthews Duncan, and where he could hardly believe it was not a polypus he had to deal with. The fundus protruded through the cervix, and there was no stricture and no resistance. The fundus could easily be crowded into the cervix, but the difficulty was to reinvert it. No one, unless he had tried it, could have any idea of the difficulty and apparently hopeless nature of the task. One good point was the tolerance of the fundus to manipulation. In none of his cases had there occurred any metritic reaction. He was sorry that in his second case he had persisted so long in attempting reposition. After the ordinary efforts at replacement are honestly and fairly tried, it is a mistake to use force too long and too persistently.

Meeting XIV.—June 13, 1881.

Dr Angus Macdonald, *President, in the Chair.*

I. *Dr Barbour* showed, for Professor Simpson, some of the FLUID withdrawn from a cervical cyst of unusual size. The patient

from whom it was removed was a young lady eighteen years of age, who had been sent to Professor Simpson from England, suffering from menorrhagia and anæmia. Ergot and medicines of various kinds having been of no avail in checking the continuous metrorrhagia, the hymeneal orifice was gradually dilated with the finger. The bimanual examination showed the cervix to be distinctly enlarged, but the fundus uteri was normal in size and position. On dilating the os externum with the finger, a body like a piece of soft blood-clot was felt in the cervical canal, and on complete dilatation it was found to be a soft cystic tumour, springing by a broad base from the anterior and left side of the cervical canal. An exploratory needle was introduced and 2 oz. of a mucous fluid was drawn off.

II. *Dr Hart* then read his paper on THE CAUSATION OF THE MOVEMENTS OF THE HEAD AT THE BRIM OF THE RICKETY PELVIS, WITH ILLUSTRATIVE CASES AND SOME REMARKS ON TREATMENT, which will appear in the next volume of the Transactions.

The President had listened with extreme interest to a contribution which did such credit to the Edinburgh Obstetrical Society. An excessive amount of ignorance on this subject was recently shown in the debates in the London Obstetrical Society on the use of forceps. Such a paper as this would have saved half the discussion which took place then. The whole discussion turned on the nature and degree of the pelvic deformity. There is no difficulty in cases of extreme deformity, in a pelvis with a conjugate of 1½ inches, because in such the indication is clear. But such cases as have been brought forward in this paper are the touchstone of obstetrical knowledge. He quite agreed with the description of the mechanism which was given, but the explanation of its causation was not quite satisfactory. A great deal was due to Lahs in attempting to give an explanation of the movements of the head, but he had never accepted, in its entirety, Lahs's theory of the girdle of contact. However well it might apply in reference to the uniformly dilative, perfectly elastic cervix, he could not see how it could be maintained when the boundaries of the girdle were rigid and osseous. He was not sure that Dr Hart had succeeded in regard to the explanation of the causation; though with regard to the girdle of contact and the general pressure theory, he believed they both contained germs of truth. With the clinical facts and the practical deductions made from them he entirely agreed.

Dr Croom thought the practical points of the paper were of great interest. He believed in the importance of suprapubic pressure. The value of it was incalculable, for much more force could be applied by pressure on the head than by traction on the legs. The selection of forceps or turning was the most difficult point in obstetrics. He had still difficulty in deciding which to employ in

a primipara. It was easy in a multipara when you had the history of former labours as a guide. You could not tell what the mechanism was to be till the membranes were ruptured, and then the favourable opportunity for turning was gone. He would still always have recourse to forceps in the first instance in a primipara.

Dr Barbour thought that the term plane of girdle of resistance was more suggestive than the plane of girdle of contact. But there was not a girdle of equal pressure all round in the rickety mechanism; the head was caught at definite bony points. He was not sure that if this plane was divided by a line joining the points at which the head was caught before and behind, it would be found that the area to the fore-head side was greater than that to the occipital side. Though the spine theory was wrong, being based on a study of the fœtus as a skeleton, and it was more correct to speak of the fœtus as a plastic mass, he did not think that we could reduce the propelling force of the uterus to a question of a fluid pressure acting equably on all parts of the plane of the girdle of contact.

III. *The President* then read his

REPORT OF FOURTEEN CASES OF COMPLETED OVARIOTOMY.

The operation of ovariotomy not long ago was looked upon as an unwarrantable proceeding; nor need it be wondered at when we know the terrible feelings of dread with which surgeons regarded interference with the peritonæum, and the extremely exaggerated fears they had of peritonitis. But within the last twenty years the labours of Mr Spencer Wells, Dr Thomas Keith, etc., in this country, and of a large array of ovariotomists in Europe and America, have established the fact that this operation is not only a warrantable and a successful one, but an operation that is quite within the power of any one to perform who is willing to operate with ordinary care, and who possesses a fair amount of surgical dexterity. To bring the subject to this issue cost the pioneers of ovariotomy much trouble, toil, and patience. They had to face the most determined opposition from a section of the profession whose conservatism is always found laid in the scale over against progress. It is perhaps better that it should be, as the temptations to brilliant display of the surgical art are so great that, were it not that this feeling opposes it, lives might frequently be unnecessarily sacrificed at the shrine of surgical glory.

One of the results of this state of our knowledge respecting ovariotomy is that very many more persons are attempting it, and the operation is being performed all over the country with astonishing success. I confess myself to be one of those people who have recently tried my hands at this operation, and the record of my

first fourteen cases is here presented to the Society in the hope that it may interest them. As a gynæcological physician is constantly brought face to face with the diagnosis of ovarian tumours, he is naturally tempted to operate on such as occasion offers. I am one of those who think it is necessary for a medical man concerned with the diagnosis of those tumours to himself operate, or at least to operate occasionally, inasmuch as his powers of diagnosis, tested in this way by himself, are sharpened and improved in a way that it is difficult to bring about if he is not allowed to operate. Consequently, I regard the rule adopted in some of the London hospitals of separating the diagnosis from the treatment of such tumours, assigning the one to the gynæcological physician and the other to the pure surgeon, as on the whole a mistaken policy.

The educated touch of the gynæcologist, and the methods of examination peculiar to him, fits him for deciding many points concerning these tumours which the surgeon is unable to undertake, and must accept on his evidence. This places the gynæcologist who operates in a more favourable position than the surgeon, because it is one of fuller and more accurate knowledge of the subject in hand. It may be said that the greater dexterity of the pure surgeon, and his fuller resources in case of emergency, more than make up for such deficiency in the matter of diagnosis. This I doubt. In surgery the overwhelming consideration is to know what is to be done. The manner how—as was so strongly pointed out from time to time by the late Mr Syme—is always of secondary importance, and usually within the reach of every careful, well-instructed medical man.

The practice of America, the motherland of ovariotomy, as well as that of Germany and France, is to assign this operation especially to the members of our branch of the profession. Leaving this apology for my action, I now proceed to briefly record the cases.

Case I.—My first case was that of Mrs A., æt. 64, widow, 153 Rose Street. This patient was admitted into Ward XVI., old Royal Infirmary, on 31st July 1878. She was found to suffer from an abdominal tumour of considerable size, and from severe abdominal pain to the right side of the umbilicus.

This patient was tapped by me on the 1st of August, and 160 oz. of a dark brown glairy fluid evacuated. This fluid was highly albuminous, had a specific gravity of 1035, and showed under the microscope some blood corpuscles and a large number of rounded corpuscles slightly larger than white blood corpuscles, with some granular or shiny points in them. There was also much detritus and large granular cells in the fluid.

The diagnosis in this case was put beyond a doubt by the result of the tapping.

The patient returned home, and as the fluid slowly reaccumulated

it soon became necessary to relieve the patient permanently. Dr Thomas Keith some time before had published his surprising results with the aid of antiseptics, and, emboldened by his example, I resolved to operate in this case. The operation was performed on the 6th of December 1878. I was assisted by Dr A. Montgomerie Bell, Dr Playfair, Dr Macgibbon, and Dr Jardine. The strictest antiseptic precautions were employed, with large steam spray. After the patient was thoroughly anæsthetized with a mixture consisting of three parts of absolute ether and one of chloroform, an incision of 3–4 inches long was made in the linea alba, terminating about an inch above the pubes. The walls of the abdomen were very thin, and the peritonæum quickly reached. The tumour was adherent to the anterior abdominal wall to a considerable extent. These adhesions were partly torn asunder, partly cut, and tied. There were no pelvic adhesions.

The tumour was to a great extent monolocular, and its contents ran through the trocar. The pedicle, which was connected with the right ovary, was treated with the cautery. After slacking the clamp a large vessel bled in the right border of the stump. This was secured by passing a silver wire round it, tying it tight, and cutting it short.

The abdomen was thoroughly cleaned out with sponges, the wound brought together by deep stitches of carbolized silk and superficial stitches of catgut, except at lower angle, where a glass drainage-tube was inserted. The wound was dressed, the patient put to rest, a brandy enema administered, and hot bottles applied around her. The operation lasted nearly two hours, and the tumour with contents weighed 15 lbs. She made an excellent recovery. The glass tube was taken out on the third day. The wound healed throughout by first intention, except where the tube was. The stitches were removed on the 8th day. The temperature never rose over 101°, and that only on one or two occasions, although the patient suffered from a nasty bronchial cough which had been present previously, but which was aggravated by the exposure during the operation. She was fed entirely on small quantities of milk and hot water, as recommended by Dr Keith, for the first week. The bowels moved spontaneously on the 8th day, and the patient was able to be up and about between the third and fourth week.

Case II.—My second case was that of Miss H., æt. 44, unmarried, from Galashiels, admitted into Ward XVI., old Royal Infirmary, on 17th January 1879, on the recommendation of Dr Murray, Galashiels. This patient had always enjoyed good health, except for the discomfort occasioned her by an abdominal swelling, which had distressed her for three years past. The patient had had one child fifteen years previously. On admission her abdomen was found to be distended to about the size of a seven months' preg-

nancy by an exceedingly tense, elastic tumour. The percussion of the front of abdomen over the tumour elicited a dull note; the flanks a resonant note, and change of the patient's position did not alter the areas of dulness. Friction could be felt and heard over certain portions of the tumour, which did not appear to be adherent to the abdominal parietes. Fluctuation and fluid thrill were both perceptible in the tumour. The surface of the tumour was tolerably uniform. A small movable uterus was to be felt in the pelvis, displaced forward towards the left, the tumour filling up the inlet into the pelvis. There was no tenderness on pressure over any part of the tumour. An aspirator trocar was introduced, and 88 ounces of chocolate-brown-coloured fluid was extracted. This, on microscopic examination by Dr Foulis, was declared to contain some altered corpuscles, numerous large and small granule cells of undoubtedly ovarian origin. The diagnosis being now clear, on the 25th of January 1879 I proceeded to operate.

The tumour was found to be multilocular, so that several trocars had to be employed before the tumour could be sufficiently lessened in size as to get through the abdominal opening. There were no adhesions. The pedicle, a long one, was attached to right broad ligament, and was treated with cautery, but two vessels which bled in its surface had to be secured by silver wire. The abdominal cavity was then well sponged out, and the pedicle dropped inside. A glass drainage-tube was put in the lower angle of the wound, and the abdominal wound brought together in the usual manner, the abdomen well bandaged, and the patient put to rest. A brandy enema was administered. The after-treatment of this patient was the same as in Case I. The drainage-tube was taken out on the second day, after which the dressing was not disturbed for three days. On the eighth day the abdominal wound was found entirely closed. The deep sutures were now removed, the superficial catgut sutures having already disappeared of themselves. The highest temperature in this patient's case was 101°·8. The patient was dismissed cured on the 20th February—that is, twenty-six days after the operation.

Case III.—Mrs H., from Dundee, æt. 53, mother of eleven children, admitted into Ward XVI., old Royal Infirmary, on 17th January 1879. This patient was sent by Dr Sinclair of Dundee. The patient stated that she ceased to menstruate about two years previously. About six months before she came to Hospital she observed some red discharge from the vagina, which recurred every fortnight, and at the same time she observed a swelling in the abdomen at its lower part. For this she applied for relief to several medical men in Dundee, and finally fell under the care of Dr Sinclair, who sent her to me. She was very much exhausted indeed by chronic bronchitis, indigestion, and pain in the abdomen. The abdomen was distended by a rounded tumour that gave

the appearance of a full time pregnancy. On manipulation there was pretty well marked friction fremitus felt over the whole of the tumour. Measurement round the umbilicus was 34 inches. The whole surface of the tumour gave a dull percussion note, except at the sides posteriorly, where resonance is well marked—more at left than right side. Fluctuation and fluid thrill felt in the tumour. On the left side there is a feeling of solidity about the tumour.

Per Vaginam.—The whole of the inlet into the pelvis is occupied by a softish mass, except on the right side, where a hardish mass, apparently the displaced fundus uteri, is felt. This opinion is confirmed on passing the sound, as it enters obliquely towards the right and upwards. The sound passes three inches.

On 19th January the cyst was aspirated, and 60 ounces of fluid of a palish brown colour removed by the aspirator. The main cyst being emptied revealed the presence of several hard bodies, apparently smaller cysts, composing the tumour. Dr Foulis examined the fluid, and found it to contain fibrin, and also large and small granule cells and a few blood corpuscles. He declared the fluid to be unmistakably ovarian in origin, and to indicate a certain amount of inflammatory action in the tumour, but not malignancy. The tapping gave some relief to the breathing, and the temperature, which had been from 101° to normal, began to range from 99°·4 to normal. The patient kept very feeble, however, and the cyst rapidly refilled. After the hyposulphate of soda had been administered to the patient for several days in five-grain doses, the operation of ovariotomy was performed by me on 22d February under anæsthesia and the strictest Listerian precautions. On opening into the peritonæum it was found much congested, as also the wall of the tumour, which was almost gangrenous and extremely brittle.

The tumour proved to be composed of two large and a number of smaller cysts with solid material. There were no adhesions. The pedicle was very short, scarcely permitting the application of the cautery clamp. The pedicle was slowly cauterized, but two vessels had to be tied with silver wire on removal of the clamp. The abdomen was carefully sponged out, and the pedicle dropped. The wound in abdomen was treated as usual. The solid matter of the tumour weighed 4 lbs. and the fluid 250 ounces, making in all 19 lbs. 10 ounces. It was connected with left broad ligament. The after treatment was the same as in the other cases. The patient made a fairly good recovery. The temperature never was over 102°, and she was able to return to Dundee in the fifth week after the operation.

I was sorry to learn, by a note from Dr Sinclair, that four months after the operation this patient died with symptoms indicative of malignant disease in the region of the sigmoid flexure. As she completely recovered from the operation, and as Dr Sinclair, in his

note to me, distinctly states that he was perfectly certain that the cause of death had no relation to the operation, which was in all respects satisfactory, I consider myself perfectly warranted in including this patient among my list of recoveries.

Case IV.—Mrs B., æt. 35, married, was admitted into Ward XVI., old Royal Infirmary, on 13th July 1878, complaining of severe pain in the right lumbar region, with great swelling, due to ascites. The abdomen was punctured, and 20 pints of a clear straw-coloured fluid removed. After being tapped it was found that there was a hard movable tumour about the size of a child's head, which, however, was situated high up, close to the liver, on the right. The uterus also was found to be enlarged. The left ovary was found healthy. On the 20th of July the patient aborted, after which she was very ill for a few days, but ultimately recovered, and returned home on 22d August with instructions to report herself before long. At this period I was not sure what was the nature of the rounded abdominal tumour.

On 22d April 1879 Mrs B. again applied for admission. She was very much exhausted. In consequence of the enormous amount of abdominal distention, there was marked prolapse of the posterior wall of bladder. The uterus was displaced downwards and towards the right, the inlet into the pelvis being occupied by a large, semi-elastic, resistant mass. The abdomen was enormously distended. There was easily made out a very large tumour composed of two large cysts, an upper and a lower, connected together with solid matter. There was also a considerable amount of ascitic fluid present. Examination per rectum showed that the left ovary was healthy, but that the tumour was connected with the right broad ligament.

On 24th April the cyst was aspirated, and 170 ounces of a sticky fluid removed. This fluid, on being submitted to examination by Dr Foulis, was declared by him to be ovarian in origin.

On 9th May 1879 the patient was subjected to the operation of ovariotomy, ether mixed with chloroform being used as the anæsthetizing agents; strict Listerian precautions. There was a considerable amount of ascitic fluid. As previously made out, it was found that the tumour consisted of three parts—two large cysts and an intermediate solid portion composed of small cysts with glairy thick contents: some contained purulent stuff. There were extensive adhesions to the mesentery. The lower cyst was first tapped and emptied. The middle portion would not allow the tumour to be drawn through the original incision, and it had to be extended upwards for about 1½ inch. By traction upon the tumour the upper cyst was now got sufficiently depressed that the large trocar could penetrate it, and its contents were run off. The mesenteric adhesions were tied in two places by catgut ligatures, and the intermediate portion divided by scissors. A large number of ligatures were needed. The upper cyst was found to be inflamed, and

its walls soft and friable. The pedicle was transfixed and tied with No. 4 Chinese silk, care being taken to link the sutures before tying them, and to carry one of the sutures round the entire stump after the mass had been ligatured in two halves. About half an inch of the pedicle was left beyond the ligature. There was a good deal of internal oozing. The peritonæum was carefully sponged out, and finally the wound was closed with eleven deep and several superficial sutures. A glass drainage-tube was put into the lower angle of the wound, and antiseptic dressing applied. The patient was much exhausted after operation, but quickly rallied. There was a good deal of oozing in the course of the evening. For this Dr Playfair injected ergotin subcutaneously. The fluid and solid constituents of the tumour together weighed 43½ lbs.

At 10 A.M. on 10th the dressing was changed, when it was found the bleeding had quite stopped. The abdomen was quite flat and discharge sweet. The glass tube was removed. This patient went on favourably for a few days, but unfortunately an abscess formed in the peritonæum, which delayed her recovery. This, however, healed completely under the use of a drainage-tube and disinfectant washing, and the patient was getting on well and was about to leave the Infirmary when, on the 6th of July, she began to vomit, and this was followed by unmistakable symptoms of obstruction.

On 13th July Mr Joseph Bell opened the abdomen in the hope of reaching the obstruction; but coming upon thick masses of very greatly indurated tissue, in which the intestines were enveloped, he desisted. The patient lingered on till the 18th of July, when she died.

Dr Hamilton made a post-mortem examination on 18th, of which the following is a brief abstract:—Hard nodular mass felt in umbilical region. On opening abdomen a cavity is found to underlie the wound (made by Mr Bell), formed of adhesions of mesentery and the remains of the pedicle to the abdominal wall. Cavity, somewhat triangular in shape, measured four inches from above downwards, and three inches at upper part. It was completely shut off from abdominal cavity by surrounding adhesions. Loops of ilium were in great part bound down to posterior aspect of pedicle by means of semi-organized adhesions. A considerable portion of small intestine lay between spine and pedicle, the whole being firmly bound down to the lumbar portion of the spine by firm bands. There was considerable general peritonitis, apparently of some standing, with small somewhat flat nodules resembling tubercles in their gelatinous consistence; left ovary and uterus natural; some perihepatitis of old standing.

Although this patient recovered from the operation tolerably, though slowly, and, had it not been for the extremely weak state in which she was in before the operation, and the fact that she had a miserable home to go to, might have been discharged some time before she was seized with her final illness, yet, as she died two and a half months after operation, I was quite

prepared to regard her case as a death from the operation, until, when calling upon Dr Hamilton very lately regarding the ligature and pedicle, I was informed by him that Mrs B. had died of malignant peritonitis. His report to me on the examination of the pedicle I herewith include. It is certain evidence as to the cause of death, and is also an important contribution to our knowledge in regard to the changes undergone by the silk ligatures, and an important addition to the observations of Alban Doran[1] on that subject. It proves that we need have no fear regarding the absorbability of silk ligatures.

"*The Pedicle.*—Examination in recent condition showed that the indurated part behind the pedicle was decidedly cancerous. There was a hard stroma containing depôts of epithelial cells, most of them being of a flat character. The cancer appeared in the recent examination to arise from the intestine. The pedicle and portions of the tumour were carefully prepared for further examination.

"Examination, after being specially prepared, fully confirmed the idea of its being cancerous. There was a very dense stroma, with, in some places, a tendency to the formation of epithelial cell-nests. Large vacuoles were seen in some of the cells. On more careful examination the cells appeared mostly to be of a large spheroidal type. In some parts they had a cubical shape. They were all highly nucleated, and in many cases contained vacuoles.

"The *ligature* could be seen as a distinct fibrous cord surrounding the pedicle. Sections of portions of this were teazed out with needles, and did not show anything more than a little fibrous tissue. Transverse sections were then made of it, and carefully examined. The silk seemed all to have disappeared, and its place to be taken by a quantity of fibrous tissue containing numerous bloodvessels. Connective tissue nuclei were seen lying on the bundles. The fibrous tissue which had resulted had a circumscribed border, and in bulk it appeared to be nearly equal to the ligature itself. The tissues around seemed comparatively healthy, there being little of the cancerous infiltration at this part."

Case V.—Mrs H., married, æt. 59, from Falkirk, admitted to Ward XVI., old Royal Infirmary, on 5th of April 1879, complaining of much distention of the abdomen.

The patient has had five children, who are all alive and in good health. She herself has always enjoyed good health, except that an attack of inflammation of the eyes twenty-five years ago deprived her of her sight. About the beginning of last year (1878) she began to experience a sharp shooting pain occasionally in the region of the nipple, for which she was sent into the surgical wards under Professor Annandale, who amputated her right breast. The patient remained in the hospital for about six weeks. She thinks she noticed the abdominal swelling three years ago. It did not grow

[1] *Bartholomew Hospital Reports*, vol. xiii. p. 195, and xiv. p. 113.

fast. Of late, however, the distention and pain in the abdomen had been so great that she was compelled to return to hospital.

Condition on Admission. — Abdomen largely distended, and rather unequally so, its surface being specially lobulated. Percussion note is dull over the entire abdomen, except at the flanks low down on each side, and between the upper border of the tumour and the lower end of the sternum. The tumour projects laterally so as to overhang the lumbar region. Circumference of abdomen at its widest part immediately below the umbilicus was 46 inches; from pubes to umbilicus, 10 inches; from right anterior superior spine of the ilium to umbilicus, 11 inches, and from the left, 12 inches. The tumour is partially movable in the abdomen, and rises and falls with respiration. Fluctuation and fluid impact thrill can clearly be made out in a considerable portion of the right side of the tumour; but on the left the tumour appears to be semi-solid. There is loud abdominal friction audible on auscultating the right side of the tumour.

P. V.—The uterus was high placed and pushed towards the left. It was movable, short, abnormally firm, and long for the age of the patient. The sound passed 4 inches into the uterus. Only diffuse resistance was felt at the inlet of the pelvis.

On 15th April an aspirator needle was introduced, and 234 ounces of a darkish olive-coloured fluid obtained, of spec. grav. 1050. It coagulated readily on heat. The result of aspiration was to show that the tumour was composed of a large cyst occupying its right and upper parts, whilst its lower part was made up of a multitude of smaller cysts that with their sticky contents appeared nearly solid. Microscopically the cyst contained many granule cells, some blood and cholesterine corpuscles.

On 25th May the cyst had become again filled, and 290 ounces of a thick fluid were withdrawn. There were many cells in this fluid which looked like pus; but on subjecting the fluid to Dr Foulis he said they were not really so, but ovarian cells.

On the 2d June the patient, whose temperature had been standing at 100° or over for some time, suddenly fell into a state of collapse, the temperature dropping to 97°·2. From this condition she was with difficulty rallied by brandy and heat. Feeling that, if an operation was to be performed, the weak state of the patient could not brook delay, I resolved to operate on the 3d June. Accordingly the operation was performed in the usual manner. There proved to be only one slight adhesion to the great omentum, and it readily yielded when pulled upon slightly.

The tumour, as we had reason to know already, was composed of one large and a multitude of small cysts, the latter forming the lower part of the tumour. In consequence of its solidity, this part of the tumour could not be removed until the incision was extended as high as the umbilicus. The pedicle was of great length, not specially broad, and connected with the right broad ligament. It

was transfixed and tied with No. 4 Chinese silk ligatures. There was no bleeding during the operation, and no escape of fluid into the peritoneal cavity. Having made certain that there was no oozing from the pedicle, it was dropped into the abdomen, the abdominal wound closed, and the antiseptic dressing applied. No drainage-tube was used. The cervix and contents weighed 19 lbs. The patient really never properly rallied from the operation. She died on the morning of the third day. The temperature rose from 98°·8 to 100° until about twelve hours before death, when it gradually rose to 103°. The radial pulse was nearly imperceptible ever after the operation, notwithstanding the free use of brandy, and it continued so till death. Its rate averaged 114. There was no vomiting, no abdominal distention, and very little pain. The patient also passed wind on the second day. Indeed, the operation promised to be very successful, and only appeared to fail on account of the extreme condition of weakness into which the patient had fallen before it. No post-mortem examination was allowed.

Case VI.—J. B., æt. 20, unmarried, domestic servant, admitted to Ward XVI., Royal Infirmary, on 24th January 1879, complaining of pain in the abdomen, near the left groin, of a semi-radiating character. Her menstruation had been regular, and she suffered from occasional dysuria.

Condition on Admission.—Patient fairly well nourished, but flushed and anxious-looking. Temperature 101°, and pulse 120, feeble. Soft systolic murmur at base of heart (hæmic ?). Abdomen considerably distended, measuring 35 inches round the umbilicus. The distention was very uniform in the abdomen, but the tumour was seen to project more towards the right than towards the left. Measurement round the umbilicus, 36 inches; from symphysis pubis to umbilicus, 7 inches; from umbilicus to ensiform cartilage, 5¾ inches; from right anterior superior spine of ilium to the umbilicus, 7½ inches, and from left 8 inches. Percussion laterally in both lumbar regions is resonant. Fluctuation and fluid impact thrill were manifest in the tumour. Some tenderness felt on manipulating the abdomen. The surface of the tumour was uniform, and no friction could be felt, but is heard loudly on auscultating the abdomen.

P. V.—The uterus was found normal, only pushed down towards left; sound entered 2½ inches. No part of the tumour projected into the pelvis, although its rounded outline could be felt on depressing the tumour by abdominal pressure towards the examining finger. Warm fomentations and poultices were applied over the abdomen, and two grains of quinine ordered thrice daily. By this treatment and the rest and quiet in hospital the patient's febrile symptoms and abdominal pain disappeared; but the abdomen continued to enlarge. On February 10th the tumour was

aspirated, and 214 ounces of a dark greenish colour drawn off. Its specific gravity was 1015; it coagulated on heating and on addition of nitric acid. Microscopically it exhibited a few granule corpuscles and altered blood corpuscles. After the tapping the tumour completely collapsed, and it was with difficulty that we could detect its existence at the lower part of the abdomen over the pelvic inlet on the left.

By the 30th March it had become considerably refilled; but as it was giving no inconvenience the patient was sent home, and asked to report herself in six weeks. She came back on the 19th of May, and was sent home again for another month.

She finally returned for the operation on the 20th of June. The measurements then were essentially the same as on admission. The tumour had clearly developed more towards the left than towards the right since it was tapped. Free fluctuation was to be made out all over its surface. The tumour moved up and down with respiration, and appeared free from attachment to the abdominal parietes. The upper edge of the tumour was within an inch of the ensiform cartilage. Resonance was clearly marked in the left groin, much less clearly so on the right.

The ordinary operation for ovariotomy was performed on 27th June under the strictest Listerian precautions. The abdominal walls were very thick, so that more than usual bleeding occurred in making the abdominal incision.

The tumour was found to be attached to the right broad ligament. It was excessively tense, and its walls very thin. The left Fallopian tube and part of the broad ligament lay on its anterior surface. There were no adhesions. The tumour was tapped, and proved to be almost unilocular. The pedicle was thin, and was secured by transfixion with a ligature of No. 3 Chinese silk. On examining the right ovary an elastic tumour of dark colour, about the size of a hen's egg, was found in it. Believing this to be a young cyst, I ligatured its attachment to the broad ligament, using No. 4 Chinese silk, and removed the ovary. Subsequent examination of this ovary, however, proved that I acted under a misapprehension. The elastic dark mass was a huge extravasation of blood into the tissue of the ovary that would appear to have taken place with the escape of an ovum in connexion with the immediately preceding menstruation. The patient had menstruated the week before the operation. The pedicles were both dropped into the peritonæum, and the subsequent treatment conducted in the usual manner. A glass drainage-tube was used. The tumour with its contents weighed 9 lbs. The patient made an uninterruptedly good recovery. The drainage-tube was taken out the third day after the operation. The temperature was never over 100°, and after the third day ranged from 98°·4 in the morning to 99° at night. The patient returned home on 19th July, being three weeks and a day after the operation.

Case VII.—Mrs B., æt. 30, married four years, mother of three children, was admitted to Ward XVI., old Royal Infirmary, on 30th of January 1879, complaining of pain and distention of the abdomen. She began to fail in health towards the end of the previous October. She experienced great pain in right side of the abdomen, accompanied with fever, and at the same time noticed that her belly began to swell. She was ultimately seen by Dr John Playfair, who recommended her to the Infirmary.

Condition on Admission.—Patient was pale and thin. Some œdema and swelling of the whole right leg, more especially near the ankle. Abdomen presented appearance of an eight months' pregnancy. The superficial abdominal veins were much distended and very large. Measurement round umbilicus, 35 inches. Percussion yields a dull note, except over a portion of the abdomen extending from ensiform cartilage to a part two-thirds the distance from that to umbilicus. Percussion at the flanks also comparatively dull, but not absolutely so. Fluctuation and fluid impact thrill over the whole of the abdomen. Palpation does not cause much pain, except over a single spot midway between umbilicus and anterior superior spine of right ilium. The uterus was rather drawn upwards, was movable, and sound passed 3½ inches into its cavity, causing some pain. There was no perceptible change of resonant areas on change of position of patient, and no transverse flattening of the abdomen when the patient lay on her back.

1*st February.*—Abdomen aspirated, and 104 ounces of a pale bluish-coloured gelatinous fluid drawn off. The fluid was, on microscopic examination, reported by Dr Foulis to be undoubtedly of ovarian origin. Subsequently to this tapping the patient had a rather severe attack of peritonitis, which, however, yielded to treatment.

By the 26th of March, though the cyst had to a considerable extent refilled, the patient's general health was much improved, and she returned home.

She was, however, readmitted on the 4th of June 1879, when it was noticed the patient's general condition had improved, but that the abdomen was distended to a degree corresponding with its condition on admission in January. The measurement round the umbilicus amounted to 37 inches; from upper edge of symphysis pubis to umbilicus, 7 inches; to tip of xiphoid cartilage, 15 inches; from umbilicus to left anterior superior spine of the ilium, 8 inches, from right, same. No friction audible on auscultating the abdomen. The uterus now only measures 2½ inches, is movable, and is pushed downwards, the fundus being felt in the fold of Douglas. So far as can be made out, no part of tumour is fixed within the true pelvis. Pulse 72, regular, but feeble.

On 9th July the operation of ovariotomy performed. The usual preliminary operations and Listerian precautions were attended to. On cutting through the linea alba, a dense but fragile, extremely

vascular cicatricial tissue was cut down upon. It was very difficult to secure the bleeding points, as the tissue was so dense. On penetrating this tissue the scalpel opened into the tumour, whence a large quantity of fluid contents escaped. None, however, entered the abdomen, as the sac was uniformly and firmly adherent to the anterior abdominal wall. Having emptied the cavity of the cyst, which was nearly unilocular, I turned it inside out and found it was free from attachments posteriorly, but firmly bound to a broad surface along the anterior wall of the abdomen. I proceeded to peel the tumour off from its attachment. To do so, however, I was compelled to enlarge the incision superiorly. Numerous and firm adhesions were found between the tumour and the mesentery, and also between it and the small intestines. The adhesions were carefully broken through or divided, and all bleeding points ligatured. The pedicle, which was connected with the right ovary, was transfixed and tied with a ligature of No. 3 Chinese silk. The left ovary being also manifestly cystic, its attachment was also ligatured and itself removed. There was very little bleeding. The abdomen was thoroughly sponged out, the pedicles dropped, and the operation finished in the ordinary manner, a glass drainage-tube being introduced at the lower angle of the wound.

The patient rallied fairly well after the operation. The wound was dressed next morning, when it looked perfectly healthy, and there had been no oozing. Pulse, 120; temperature, 101°·4.

The patient did well the whole of that day, but next morning about 6 A.M. she passed suddenly into a state of collapse, from which she was with difficulty roused by administration of brandy. At visit her pulse was 140. When dressed the wound looked well—no abdominal distention, and only slight tenderness on pressure over the recti. No fluid could be sucked through the glass tube, which was removed as its pressure was irritating the bladder and causing incontinence of urine. Morphia suppositories were continued every sixth hour. The patient felt relieved during the night, and had some sleep and passed wind, but the pulse-rate continued at 140 and the breathing became rapid. She vomited once or twice during night. Next morning an attempt was made to strengthen the heart by injecting digitaline under the skin. This was repeated once or twice, but was of no avail, as the patient died at 11 A.M. the beginning of the fourth day after the operation. We were allowed to enlarge the wound and look into the abdomen. Only very slight peritonitis was found—no bleeding. The pedicles were removed and given to Dr Hamilton, who reports of them as follows:—"The loose end of the ligature attached to the pedicle contained a small quantity of fibrinous lymph, and was extremely friable—easily broken down with needles. The portion immediately round the pedicle was not so infiltrated, and did not appear to be much altered. The portion of pedicle beyond the point of ligature did not seem to be markedly altered further than being infiltrated with fibrinous lymph.

The tissues here may have been a little more granular than in the attached portion of the pedicle, but not to any great extent. They did not appear to have undergone fatty degeneration."

Case VIII.—After this mournful experience, no other patient suffering from ovarian tumour of sufficient size to warrant operation came under my charge till the 7th October 1880, when Mary W., æt. 34, single, from Newcastle-on-Tyne, was admitted into Ward XXVIII., Royal Infirmary, Edinburgh, complaining of a tumour in the lower part of the belly, which caused her much discomfort by its weight and dragging. She had noticed it first about fifteen months ago, but latterly it had grown much more quickly than at first. She also suffered from persistent red discharge from the vagina. Her family history was not good, as several of her female friends appeared to have died of malignant disease. Her mother died of ovarian dropsy at sixty-one, having been tapped once about two months before her death. On admission general health tolerably good, system healthy. The patient was very nervous and excitable. The abdomen was pretty uniformly enlarged, slightly more prominent on the right than on the left. Dulness on percussion extended from pubes to two inches above the umbilicus. Resonance in both flanks. The areas of dulness were not altered by change in position of the patient. The tumour was smooth and even in outline. It seemed rather hard and solid on the right, but soft and fluctuating towards its left border. A fluid impact thrill was obscurely transmitted through it on tapping. Distance from ant. superior spine of ilium to umbilicus, on right side 7¼ inches, on left 7½ inches; from lower end of xiphoid cartilage to umbilicus, 7¾ inches; circumference of abdomen round umbilicus, 33¼ inches; 2 inches below umbilicus, 34¼ inches.

P. V.—Uterus displaced downwards and towards the right; sound passes 2½ inches.

On 8th October the largest trocar of the aspirator was passed into the tumour in the mesial line half way between the umbilicus and the ensiform cartilage, but nothing was obtained except a few drachms of a reddish fluid. This, on settling, was seen to consist of blood-cells with a few large nucleated corpuscles lying in a fibrinous matrix.

The patient was sent home on 18th October, with orders to return in two months. No evil resulted from the tapping.

She again presented herself on the 17th December 1880, when the tumour was found to have considerably increased, and to have become softer towards the left, but hard and nodular towards the right. Very distinct fluctuation and fluid impact thrill on the left side. Measurement round the umbilicus, 34½ inches; 2 inches lower down, 33 inches. Uterus as on previous examination.

27th December.—The tumour was tapped with an aspirator trocar;

but instead of mesial line, a point considerably to the left was chosen. 38 ounces of a dark-coloured fluid, with a thick coating of grayish-yellow matter, were withdrawn. The matter was nearly completely soluble in ether, and was found to consist of fatty and fibrinous detritus. Some ovarian granule cells were found in the fluid, along with a number of large, rounded, granular masses. Its specific gravity was 1016. The patient was kept in hospital till Saturday, 29th January, when she was subjected to the operation of ovariotomy. The usual preliminary arrangements were attended to. The operation was commenced at 10.46 A.M., and terminated at 12.15. The rectus was divided in making the abdominal incision. There were found to be no adhesions, but in consequence of the thickness of the contents of the tumour it would not run through a trocar, and the original opening had to be somewhat enlarged to admit of its being removed. The cysts had to be broken up by the hand and their contents turned out, sponges being placed round the opening in the cyst wall to prevent escape of its contents into the abdominal cavity. The pedicle was long and narrow, and was connected with right broad ligament. The left ovary was healthy.

The tumour was secured in the cautery clamp, and the bleeding arrested by cauterization. On removal of the clamp there was no trace of moisture in the stump, and after the abdominal cavity was well sponged out the pedicle was dropped and the operation terminated as usual. Five deep sutures were needed for the abdominal wound. No drainage-tube was used. The tumour weighed 12 lbs. The patient made an uninterruptedly good recovery. The highest temperature was 100°·2, which was reached on 5th February, after wound was dressed and deep stitches removed. The wound was dressed for the first time on the fourth day. The only drawback to the cure was from suppuration in the track of the deep stitches. They were obtained hurriedly, and would appear not to have been properly carbolized. The patient returned home on 4th March.

CASE IX.—Mrs T., æt. 43, widow, factory-worker, from Dundee, recommended by Dr Watt, was admitted on 8th February 1881, complaining of swelling of the abdomen. The patient noticed this swelling about twelve months ago. It commenced above the right groin, and gradually extended upwards and across the abdomen. She was twice in the Dundee Infirmary, first time in May, and second in November 1880. On both occasions she was tapped by aspirator by Dr Campbell. The first time 100 oz. was withdrawn, but on the second occasion very little.

On admission the patient's general condition was tolerably good, except that she presented cardiac symptoms indicative of rather serious stenosis of the mitral. The abdomen was distended tolerably uniformly to the size of a full time pregnancy. The tumour felt

semi-solid when palpated, the portion of it towards the right being chiefly fluid, that on the left solid. Percussion note on the tumour dull, in flanks resonant. Change of position did not affect the area of resonance. Measurement round umbilicus, 34½ inches; from anterior superior spine to umbilicus, on left 9¼ inches, on right 8¼ inches. On inspiration and expiration the tumour was seen to move to a certain extent below the abdominal wall. No friction on auscultation. Fluid impact thrill perceptible in some directions, in others not.

P. V.—A portion of abdominal tumour projects behind the uterus, which is thereby somewhat depressed and anteverted. The tumour can be felt filling up the pelvic inlet. The sound passes 2½ inches.

On 19th February 1881 the operation of ovariotomy was performed with ordinary precautions. The abdominal parietes were thin. On opening the abdomen a considerable amount of ascitic fluid escaped. On passing the hand into the abdomen extensive adhesions to the omentum and the sigmoid flexure of the colon were found and partly broken up.

The tumour was now tapped at several places; but as it was largely composed of small cysts with thick, tough contents, its bulk was thereby only slightly diminished. The interior of the mass was now broken up with the hands, and the contents of the tumour squeezed out, the abdomen being meantime filled with carbolized sponges to prevent the contents of the tumour escaping into the peritonæum.

On the tumour being removed from the abdomen it was found that, besides being extensively adherent to the omentum, it was firmly fixed to the sigmoid flexure. The latter was carefully separated from the tumour, and three or four bleeding points in it secured by catgut ligature. The omental adhesions required fifteen or twenty catgut ligatures. The tumour was attached by a longish pedicle to the right broad ligament. The left ovary was healthy. The pedicle was cauterized, and hæmorrhage thereby entirely restrained. The abdomen was carefully sponged out, the pedicle dropped, and the wound brought together with five deep carbolized silk sutures and superficial sutures of silk-worm gut, and antiseptic dressing applied. There was no drainage-tube.

The patient did uninterruptedly well. She was dressed on the following day. No discharge was found, and the wound was not looked at till the ninth day, when the deep stitches were removed. The union had been complete. The bowels moved naturally on seventh day, wind having been passed for several days previously.

Only twice did the temperature reach 100°. By the fifth day the temperature was normal and remained so. The patient returned home to Dundee on the nineteenth day after the operation. The antiseptic gauze proved irritating to this patient's skin, and caused a nasty bed-sore before its injurious effects were observed.

Case X.—Mrs H., æt. 41, married, 47 Cumberland Street, recommended to me by Dr James Andrew. She was admitted on the 28th of February to Ward XXVIII., Royal Infirmary, complaining of a swelling of the abdomen. Her illness began eleven months ago with pain in the left iliac fossa, soon after which a swelling was noticed which gradually extended upwards and across the mesial line. The patient was in the Infirmary for a short time in December, when the abdominal tumour was aspirated and 12 ounces of a fluid, sp. g. 1024, withdrawn. This fluid contained a little blood, which came with the last few drops, much albumen, and microscopically gave evidence of ovarian origin. On admission, the following facts were noted:—The patient has had only one child, and has usually enjoyed good health. The abdomen is very prominent, and is quite the size of a pregnancy at term. It is peculiarly tense, and the surface of the tumour communicates a feeling of irregularity to the touch. One inch below the umbilicus is a solid hard part with a well-defined upper margin, which passes obliquely downwards in a line directed towards the anterior superior spine of left ilium for about 4 inches. The breadth of the solid resistant portion is fully 4 inches. The resistance in the rest of the tumour is uniform, but its surface at all points presents irregularities. These can be felt to move upwards and downwards under the abdominal wall with the breathing. Fluid impact thrill can be felt, limited in degree, but pretty generally diffused through the tumour except over the hard part already described. The percussion dulness in the middle line extends to a point 2 inches above the umbilicus; the flanks give a clear note. Girth at umbilicus, 35 inches; from symphysis to umbilicus, 7 inches; from umbilicus to ensiform cartilage, 6½ inches; from right ant. sup. spine of ilium to umbilicus, 8¼ inches; left, 8½ inches. The diagnosis of an ovarian tumour, multilocular in character, was accordingly clear.

The operation of ovariotomy was performed upon this patient on 5th March 1881 with usual arrangements. There were found to be no adhesions except a rather firm one to the bladder. Owing to the solidity of the anterior part of the tumour, which was composed of small young cysts with thick gelatinous contents, scarcely anything would pass through even a powerful aspirator. I accordingly had to break up the cysts with the hand and turn out the contents of the tumour, protecting the abdomen as well as possible by aid of sponges. Towards the posterior portion of the tumour a large cyst with dark fluid contents was ultimately opened into, and on its evacuation the tumour could be drawn through the abdominal incision.

The tumour was attached by a short thin pedicle to the right broad ligament. The left ovary was found normal. The adhesion to the bladder was separated by the pressure of the thumb-nail, and the pedicle was slowly cauterized. The abdomen was thoroughly

sponged out. Some oozing from the loose adhesion existing in front of the firm adhesion of the tumour to the bladder gave rise to some anxiety. A ligature was put upon the largest portion of the bladder adhesion. On removal of the clamp a small artery on the right of the pedicle began to bleed; this was secured by a loop of silver wire. The pedicle was now dropped into the abdomen, and the operation finished in the usual manner; no drainage-tube was used; six deep sutures were needed to close the abdominal wound. The tumour and its contents weighed 12 lbs. The patient made an uninterruptedly good recovery. The highest temperatures were 100°·6 on the evening of the second and third days; after that the temperature became normal and remained so. The patient was dressed on fourth day. There was no irritation nor discharge. The bowels moved of their own accord on the seventh day. The deep stitches were removed on the ninth day, and the superficial on the twelfth. The healing per primam intentionem was perfect. In this case also the gauze irritated the sacrum, and we had to put cotton between it and the skin. The patient went home on the twentieth day after the operation.

Case XI.—M. C., æt. 40, single, but having one child, admitted into Ward XXVIII., 27th December 1880, complaining of much abdominal pain and some swelling. Sent by Dr J. Playfair. Before admission she had been treated by Dr Playfair with poultices and opiates for the pain, which had every symptom of peritonitis. He however discovered that, in addition to this, there was an abdominal tumour of considerable size.

On admission her general condition was fairly good. She had a slight systolic murmur at the mitral area. The abdomen was tolerably uniform in aspect, and was distended to about the size of a seven months' pregnancy. It bulged rather on left than right. Girth at umbilicus, 32 inches; distance from ant. sup. spine to umbilicus, on right 7¼ inches, on left 7¾ inches; from symph. pub. to umbilicus, 6 inches; hence to xiphoid, 6½ inches. Some tenderness on pressure over the left side of abdomen, also slight fremitus felt with respiratory movements over its right upper side; distinct fluctuation and fluid impact thrill can be observed over the whole tumour. Percussion dull in front; flanks resonant.

P. V.—Uterus movable. The abdominal tumour can be felt projecting into the pelvis from the right and displacing the uterus towards the left. Sound passes 2½ inches. The patient was aspirated on the 7th February, and 38 ounces of a viscid, dark chocolate-coloured fluid were withdrawn. Its microscopic investigation satisfied us it was ovarian, though somehow much blood-colouring matter had got into it. In consequence of a considerable amount of abdominal pain and a temperature ranging from 100° in the morning to 101° at night, operation was for some time delayed.

On the 19th the operation of ovariotomy was performed in the

usual way. The abdominal incision needed was only 3½ inches. Some loose adhesions were found on the right and anteriorly, but these were readily separated by the hand. The tumour did not empty well, as it was found to be composed of three cysts, only one of which was penetrated by the trocar and emptied; but its small size admitted of its being slowly drawn through the abdominal opening. It was attached to the right broad ligament by a rather short, small pedicle. The cautery clamp was now applied, the tumour removed, the abdomen sponged out, and the stump of the pedicle slowly cauterized. On removal of the clamp a vessel in the right side of the pedicle began to bleed. This was secured by a loop of silver wire. The uterus was observed to have several polypoid projections on its posterior wall. The left ovary was healthy. The operation was completed in the usual fashion, and lasted in all 1 hour and 25 minutes, the delay being chiefly owing to the treatment of the pedicle. The patient made a good recovery. Highest temperature was 101°·2 on the evening of the operation, except on the second day, when it rose to 103°·6 at midday, with pain in the bowels and perspiration. A dose of castor-oil was administered, followed by a turpentine enema. These acted well, and temperature dropped to 99°·8 in the evening, and continued low. The wound was dressed on the fifth day. The deep stitches were removed on the eighth day. The union had been complete. The superficial stitches were removed on the eleventh day. This patient also suffered from the carbolic gauze on the sacrum. She left the hospital on the twentieth day after the operation.

Case XII.—M. S., æt. 29, unmarried, residing at 20 Bank Street, patient of Dr Jardine, was brought by him to consult me at the Royal Infirmary on the 1st of June 1881. The patient, who possessed fairly good health, complained of a swelling in her abdomen which had continued for about two years, and now began to give her some trouble and uneasiness.

On examination, abdomen laterally uniformly distended to about the size of a six months' pregnancy. The distention was due to a rounded, tense cyst, which was perfectly movable, and gave a dull note in front, a clear one in the flanks, and both fluctuation and fluid impact thrill. The uterus was of normal size and movable. The diagnosis of an ovarian cyst previously made by Dr Jardine was confirmed by me, and it was arranged that, with his assistance and that of other friends, I should operate in the patient's house on the afternoon of Tuesday, 7th June. The usual preliminary preparations being made, the operation was performed at 4 P.M. on the above-named day. The operation was a peculiarly easy one. The cyst was a nearly unilocular one, and its contents flowed easily through the canula. There were no adhesions. The cyst was attached by a long thin pedicle to the right broad ligament. The pedicle was secured in the cautery clamp, the abdominal cavity carefully sponged out, the tumour removed, and the pedicle cauterized.

There was no bleeding on removing the clamp. The left ovary was found healthy. The pedicle was then dropped into the abdomen and the operation finished in the usual manner. The operation lasted one hour. The tumour and contents weighed about 6 lbs. The patient made an excellent recovery. The temperature never rose to 100°, but varied between 99°·8 and normal, the pulse ranging from 70 to 110.

On eighth day deep stitches were removed under the spray, when it was found the deep wound had completely united. The superficial stitches were removed on the eleventh, and no further dressing applied. The patient was able to be up before end of a fortnight.

Case XIII.—Mrs L., æt. 27, married, actress, sent to me by Mr Westwater, was admitted to Ward XXVIII., Royal Infirmary, on 6th June, complaining of swelling in the abdomen. The patient appeared in good health and well nourished. Her menstruation had latterly been *too frequent* and profuse in amount.

On admission, with exception of genito-urinary, all other systems normal. Abdomen uniformly distended about the size of a six or seven months' pregnancy. Girth at umbilicus, 32 inches; at the most prominent part, 32¼ inches; from umbilicus to symphysis pubis, 8¼ inches; from umbilicus to anterior superior spine, on right side 7 inches, on left 6¼ inches. Palpation of abdomen gave tolerably equal sense of resistance over the surface of the tumour. The tumour could be felt to move under abdominal walls with respiration. The abdominal walls could also be moved over its surface. Fluid impact thrill well observed. Percussion was clear for 3 inches above the symphysis pubis in the middle line. From that to a part 2½ inches above umbilicus, tumour was dull. On the flanks percussion note was clear.

P. V.—The uterus is anteflected. Sound enters 2½ inches. The left ovary can be felt displaced downwards and much enlarged. The abdominal tumour can also be felt in the brim. After usual preliminary preparations, the operation of ovariotomy was performed on 17th June 1881. The abdominal incision was only about 3½ inches in length, and it was kept near the umbilicus to avoid the coil of bowel that lay across the lower part of the tumour.

The tumour was readily exposed. There were no adhesions. The contents of the main cyst were so gelatinous that they would not pass through the tube of our aspirator. This led to some trouble in emptying the cyst. It was connected by a rather thick pedicle with the right broad ligament. The pedicle was secured in the cautery clamp, the tumour removed, and the stump cauterized. On searching for the left ovary it was found to be converted into a thin-walled cyst the size of a man's fist. The pedicle of this ovary was transfixed by a needle carrying a double thread of No. 3 Chinese silk. The double of the thread was cut, the threads linked, and the pedicle tied in two halves, whilst one of the threads

was finally tied round the entire stump at the constricted portion. The left ovary was then cut off at a distance of about ¼ to ½ an inch above the ligature. There was no bleeding from either stump, and both were dropped into the abdomen after the cavity had been thoroughly cleaned.

The patient made an uninterruptedly good recovery. The deep stitches were removed on the eighth day, the superficial on the fourteenth. That was all the antiseptic dressing needed. The bowels were moved by oil on the eighth day. The patient left the hospital on the twenty-second day after the operation. It is interesting to notice that Mrs L., up to the time of operation, suffered from menorrhagia, although both ovaries were converted into large cystic tumours.

Case XIV.—Mrs B., æt. 59, married, mother of three children, admitted into Ward XXVIII., Royal Infirmary, complaining of a swelling of the abdomen. Sent by Dr Allan of Falkirk. The patient had observed her belly gradually swelling for upwards of four years.

In May 1880 she was sent into the Infirmary under my care. I tapped the abdominal tumour with the aspirator, and withdrew 130 ounces of a clear, straw-coloured fluid. Its density was 1008, reaction neutral. Under the microscope a few highly refracting crystals were seen, but nothing else. With nitric acid it deposited a copious amount of albumen. On filtering out this and adding nitrate of silver to the fluid remaining, a copious white precipitate was obtained. The patient felt much better, and I sent her home on 29th of May, hoping that the cyst might not refill.

On Re-admission.—General health good. The abdomen is enormously distended by a fluctuating, nearly symmetrical tumour. Percussion all over the anterior surface is dull; in right flank loudly resonant, in left less so. Dulness in mesial line extends to within 3 inches of the ensiform cartilage. Girth at umbilicus, 40½ inches; 2 inches below, 41½; from symphysis pubis to umbilicus, 10½ inches; hence to ensiform cartilage, 7¾ inches; from umbilicus to anterior superior spine of ilium, on left 10¾ inches, on right 9¾ inches. Free fluctuation easily felt throughout the tumour.

P. V.—Uterus is displaced downwards and posteriorly, but is healthy. No part of tumour can be felt per vaginam.

The tumour was removed by laparotomy on 1st July 1881 at 4 P.M. The usual preliminary arrangements were made. The tumour was easily reached, and, being monolocular, and its contents not specially thick, nearly the whole of it was drained through a large aspirator, not a drop entering the abdominal cavity. There were no adhesions. The tumour was attached by a very broad but rather short pedicle to the left broad ligament. The right ovary was healthy, but small. No trace of the left ovary could be found. The pedicle was caught in the cautery clamp, the tumour removed, and the stump cauterized. On removing the cautery a large vessel,

running nearly parallel to the cauterized surface, began to bleed. As from its position I could not ligature it, I transfixed the left half of the pedicle with a double thread of No. 4 Chinese silk, and, after cutting the double of the thread, linked and then tied the left half of the pedicle in two portions. This effectually arrested the bleeding. The pedicle was then dropped into the abdomen, the silk ligature being cut short. The wound, which was about four inches long, was secured with four deep silk sutures and several superficial catgut sutures. The operation was completed in the usual manner.

The wound was dressed antiseptically on the eighth day, and the deep stitches removed. The superficial sutures were removed on the eleventh, and the antiseptic dressing removed. Complete union, except over a small portion of skin, had taken place. The bowels were opened by castor-oil on the ninth day. A small extra-peritoneal abscess formed in this case, and discharged through the lower angle of the wound. It healed up without causing any serious disturbance, and the patient made a most complete recovery.

The accompanying abstract needs one or two words of explanation. The mortality from the operation is seen to be 2 out of 14, that is, 14·2 per cent. The ultimate results, however, are not so favourable as this would indicate. So far as I know,—and I have taken every means to investigate the matter,—10 out of those 14 women are alive and well at this moment. As I have stated in my report, however, No. 3 died in Dundee, five months after the operation, of malignant disease about the sigmoid flexure. No. 4 also, though she recovered from the operation, died two and a half months afterwards of malignant disease of the peritonæum, as certified by Dr Hamilton's report. Still, I hardly think the operation could be blamed for her death, seeing that the growth that caused the fatal obstruction was clearly malignant.

These two cases are another proof of the unfortunate experience of such cases which has been already pointed out so pithily by Dr Keith, viz., that after a successful operation one is frequently vexed to find that the patients succumb within the first twelve months to some form of malignant disease. In regard to my fifth case, which was fatal, I consider that the patient was moribund before the operation was undertaken. Had I been less anxious about giving the patient a chance, and more anxious to maintain good statistics, I should have declined to operate. In fact, with my present experience, I think I ought not to have operated. She died from exhaustion. As to the seventh, I am at a loss to fix upon the cause of death. Dr Keith, to whom I mentioned the case, was inclined to ascribe it to septicæmia. As, however, the strictest antiseptic rules were observed, I am somewhat at a loss to know how it should have happened. I am more inclined to ascribe it to the effects of the shock from the long and difficult operation.

In the following abstract of these cases the results are seen in a bird's-eye view:—

Table of Fourteen Cases of Completed Ovariotomy.

No.	Medical Attendant.	Date of Operation.	Age.	Condition.	Adhesions, etc.	Treatment of Pedicle.	Weight of Tumour.	Length of Incision.	Result.
1	Dr Angus Macdonald	1878, Dec. 6	64	Widow	Anterior abdominal wall, considerable	Cautery. One silver ligature	7 lbs.	3½ inches	Recovery
2	Dr Murray, Galashiels	1879, Jan. 25	44	Single—one child	None	Cautery. Two silver ligatures	12 lbs.	4 inches	Recovery
3	Dr Sinclair, Dundee	1879, Feb. 22	53	Married	None	Cautery. Two silver ligatures	19½ lbs.	4 inches	Recovery
4	Hospital	1879, May 9	35	Married	Extensive to mesentery; ascites	Ligature	43½ lbs.	5 inches	Recovery
5	Hospital	1879, June 3	59	Married	Slight to great omentum	Ligature	19 lbs.	4 inches	Death in 2½ days
6	Hospital	1879, June 27	20	Single	No adhesions. Both ovaries removed	Ligature	9 lbs.	4 inches	Recovery
7	Dr Playfair, Edinburgh	1879, July 9	30	Married	Numerous and firm to abdominal walls, mesentery, and intestine. Both ovaries removed	Ligature	8 lbs.	7 inches	Death on 4th day
8	Hospital	1881, Jan. 21	34	Single	None. Tumour very solid	Cautery	12 lbs.	4½ inches	Recovery
9	Dr Watt, Dundee	1881, Feb. 19	43	Widow	Extensive to omentum and sigmoid flexure	Cautery	18 lbs.	4 inches	Recovery
10	Dr Andrew, Edinburgh	1881, March 5	41	Married	One firm to bladder	Cautery. One silver ligature	12 lbs.	4 inches	Recovery
11	Dr Playfair, Edinburgh	1881, March 19	40	Single—one child	Loose to abdominal wall	Cautery. One silver ligature	5 lbs.	3½ inches	Recovery
12	Dr Jardine, Edinburgh	1881, June 7	29	Single	None	Cautery	4 lbs.	3½ inches	Recovery
13	Dr Thatcher, Edinburgh	1881, June 17	27	Married	None. Both ovaries removed	Cautery. Ligature to left ovary	6 lbs. and ½ lb.	3½ inches	Recovery
14	Dr Bruce Allan, Falkirk	1881, July 1	59	Married	None	Cautery. Ligature to half of it	26 lbs.	4 inches	Recovery

There remains now that I should make a few brief remarks on the diagnosis and treatment of ovarian tumours.

I do not intend to enter into this matter exhaustively. That has been done by Mr Spencer Wells and others far better than I could attempt. But as this subject has seldom been before this Society, and as the diagnosis of ovarian tumours is one that largely interests obstetricians, I may perhaps not offend you if I draw attention to the more salient points of the subject. I might state that of late years ovarian tumour has become, as it were, a desirable diagnosis, as a knowledge of the great certainty of cure has disposed the practitioner to look for this particular lesion. Consequently there arises, as it were, a tendency to make mistakes in the direction of multiplying such tumours. That not a few such mistakes crop up from time to time every one in the position of being consulted in such matters will allow. In no class of cases, perhaps, are blunders more excusable. But if this be the case, it is the more necessary to make a few remarks such as I now propose. In speaking of ovarian tumours I mean to restrict myself at present to those of considerable size, which cause the abdomen to project, and give rise to concern thereby.

Of small cysts that lie in the pelvis only I do not propose to take special cognizance. In proportion as the practitioner is a master or not of the double gynæcological manipulations he will be able or unable to form a correct judgment regarding these. But suppose the tumour is large—what are the characters it presents? How is it to be detected? I should first observe that little positive information can be gathered by vaginal examination. Except it be that the tumour is very large, and, consequently, by the tension of the abdominal walls, is pressed down into the pelvis, or except it had in its early days formed pelvic adhesions, vaginal examination will give very negative results. The uterus is usually displaced to one or other side or downwards, and it is ordinarily possible to depress an abdominal tumour till its rounded outline can be felt from the vagina; but only very little information can be obtained thereby regarding the tumour. It is not meant that vaginal examination is useless or to be ever neglected. By it we can ascertain if the uterus is of normal size, or is fibroid, or is impregnated. We also ascertain in this manner if the suspected tumour occupies the pelvis, is free or attached there, is solid or semi-solid, or contains fluid, and a great many other points. Then, suppose the tumour is large, it is found to grow from the lower part of the abdomen, so as to increase the distance between the symphysis and the umbilicus more rapidly than that between the umbilicus and the ensiform cartilage. Bearing in mind that ovarian tumours take origin with one or other ovary, they usually begin to grow from one groin, and they usually continue to maintain throughout their history the original condition of asymmetry. Thus it is almost always found that the distance of one anterior superior iliac spine from the um-

bilicus is greater than the other. It is only seldom that such tumours are unilocular, so that it is not common to find free fluctuation throughout the tumour. It is usually possible to find fluctuation and fluid impact thrill over a limited area, but seldom through the entire mass.

Some ovarian tumours are completely solid. Such are of very unfavourable omen. But the great proportion of them are made up of a series of larger and smaller cysts. The contents of the smaller cysts are tougher than that of the larger, and, consequently, an aggregation of such small cysts makes the tumour feel solid. It is not common for such a tumour to be of a uniform outline. The individual small cysts make the wall of the large or parent cyst project, and in that way give rise to an uneven or nodular feel. It is to be remembered that the contents of an ovarian tumour are encysted, so that the fluid is not able to move freely. This leads to a persistence in the areas of dulness and of resonance in the abdomen, so that these do not alter, as in an ascites, with change in the position of the patient. The tumour usually displaces the intestines upwards and backwards and to one side, like the pregnant uterus. This gives rise to dulness in the mesial line anteriorly, and resonance below the ensiform cartilage and at the flanks. Occasionally, as also happens in certain pregnancies, a portion of bowel, by adhesion or otherwise, may get in front of the tumour, as occurred in our thirteenth case.

To make out connexion between the tumour and one or other broad ligament is important. It can sometimes be done without much trouble by asking an assistant to push up the tumour whilst one feels by vagina or rectum the resultant strain upon the broad ligament. Schultze puts great value on this method, and recommends, whilst it is practised, that the patient be put under chloroform. The history and mode of growth of such tumours must never be neglected, as otherwise valuable hints as to their nature may be missed.

The examination of the fluid is always of great importance, although lately, from fear of causing sepsis, I have given up tapping before operating. An ovarian cyst gives always a gelatinous fluid of a density ranging from 1012 to 1026 or more. Its colour varies from pale gray to deep chocolate. This depends greatly on the age of the fluid. The younger cysts give the lighter-coloured fluid. Such fluid gives a copious precipitate with nitric acid, is alkaline in reaction, and coagulates on heating. The deposit from such a fluid is frequently very slight; but when allowed to form, various matters may be seen under the microscope. Among these are a peculiar cell, a little larger than a pus corpuscle, in which five or six bright shining points may be seen. Dr Foulis and others regard these as particularly valuable in referring the fluid to ovarian origin. In addition to these, large rounded granular cell masses, fibrin, blood corpuscles, hæmatin, etc., are found. The

general characters of the fluid, with the peculiar cells referred to, can hardly lead to mistake, although it is to be remembered that the cells mentioned are merely evidence of rapidly proliferating epithelium, and may occasionally be obtained from fluid secreted in such a cavity as the pleura.

A cystic tumour proved to be connected with one or other broad ligament, and with such physical characters as I have indicated, supported, if necessary, by an examination of the fluid, can hardly be anything else. If the ovarian tumour is solid, then our efforts must be to determine, if possible, that it takes origin from one or other broad ligament, and is not connected with the uterus. The difficulty is to distinguish between it and a fibroid of the uterus.

Differential Diagnosis.

1*st. Pregnancy.*—The possibility of pregnancy, the signs and symptoms of pregnancy, and waiting if in doubt, place the diagnosis beyond possible mistake with a fair measure of care.

2*d. Fibroid.*—A large fibroid with solid walls, leading to general enlargement of the uterus, is easily diagnosed. The increased length which the sound enters, the fact that the uterus moves with the sound, the peculiar feel of the uterus, and the nearly constant menorrhagia, suffice to keep the diagnosis correct. It is quite common to hear a bruit in a case of uterine fibroid; only in vascular sarcomata is such audible if the tumour is ovarian. But much greater difficulty is experienced in cases of fibro-cystic tumours connected to the uterus with or without pedicle. In that case we must try to ascertain whether the tumour is connected or disconnected with the uterus. Then the cyst of a fibro-cystic tumour may be tapped, when we expect to find only a thin fluid of great density, with some blood-corpuscles, and possibly some non-striped muscular fibres. But in those cases it is often found that only an exploratory incision can determine the diagnosis with accuracy.

3*d. Renal Cysts* begin below the false ribs and extend downwards and forwards. They have a line of resonance between them and the liver due to the transverse colon, which is of value as showing they are not of hepatic origin, and when aspirated they contain urea. Usually accompanying such there are urinary symptoms, but not always.

4*th. Ascites* exhibits the characters of free motion of fluid in an imperfectly filled cavity. Accordingly, when the patient lies on her back the abdomen is flattened anteriorly, the flanks give a dull note, and there is clearness round and above the umbilicus. With change of the patient's position the areas of resonance alter. Thus if the patient is turned on her left side, the right flank gives a clear note, and *vice versa*. In case of tapping an ascites the thick gelatinous fluid characteristic of ovarian tumour is never obtained.

5*th. Hydatid Cyst of the Liver.*—In this case the tumour grows from the liver, distending first the distance between the ensiform

cartilage and the umbilicus, the reverse of an ovarian cyst. Again tapping and discovering acephalocysts in the fluid is convincing evidence of the true nature of the tumour.

6*th. Hysterical Abdominal Distention*, commonly known as spurious pregnancy, need deceive no one, as the percussion is uniformly resonant, and the tumour disappears under chloroform.

7*th.* There are many other possibilities, such as tumours of the omentum, encysted peritonitis, etc., that lead to difficulty frequently, and which, indeed, on many occasions can only be settled by an exploratory incision. But, as I stated already, this could not fail to lead me further than the scope of my paper will allow.

But after every case is taken, and with the strictest attention to all that is written on the subject, such is the complicity of the involved phenomena, that errors in diagnosis regarding these tumours cannot fail to crop up occasionally. They will, however, be fewer in proportion as the observer excels in experience and in a careful elucidation of every fact connected with the cases.

The Operation.—I now proceed to give a short account of the method of operating. In this I follow as implicitly as possible the procedure of Dr Thomas Keith, whose brilliant successes have secured him a world-wide fame, and have made us all justly proud to reckon him as a colleague and townsman. The patient is carefully prepared for the operation by several days of rest, with light diet, attention to the bowels, and the administration of an antiseptic. I formerly employed the hyposulphite of soda, but now use the sulphocarbolate of soda in doses of ten to fifteen grains thrice daily. The bowels are thoroughly emptied by a dose of castor-oil the day before the operation, and the patient is not allowed any food the morning of operating. The anæsthetic used in my cases has always been a mixture of three parts of absolute ether and one of chloroform. I have long used this mixture—which I understand is Erichsen's—for all severe operations, and in midwifery cases wherever there was a tendency to bleeding. The ether maintains the tension of the circulation and obviates the tendency inherent in chloroform to depress the heart's action, whilst less vomiting and sickness follow the use of the mixture than chloroform alone. The addition of the fourth part of chloroform makes the ether much less disagreeable to inhale at first, and, besides, makes the anæsthetization more rapid.

The strictest antiseptic precautions have been observed by me throughout these operations. They have been performed under a fine cloud of spray from a large three-pointed spray-producer. The solution of carbolic acid supplying the antiseptic element to the spray is of the strength of 1 in 20. The vapour of the water in the boiler is understood to produce an equal quantity of water, so that the strength of spray as it falls on the patient is 1 in 40. The spray-producer is placed in charge of an assistant at a distance of ten or twelve feet from the patient, whom the spray comes to sur-

round as if in a fine cloud of mist. The greatest drawback which I have experienced with the spray is the obscuration of the light it occasions. Injury to the patient from absorption of carbolic acid I have never seen, and I confess I hardly think that my friend Dr Granville Bantock is correct in attributing increase of temperature and other evils to its use. My plan of action, however, is to have as much carbolic acid as possible round about the patient and in the room, but to let as little as possible into the peritonæal cavity, so as to avoid risk either from its irritating effects or its absorption. Every instrument and sponge is kept scrupulously clean, the instruments being washed in turpentine and carbolized before using, and the sponges kept constantly in a 1–20 solution of carbolic acid when out of use. The instruments employed are kept in a tray floating in carbolic solution, and in every respect regarding ligatures and bandages Listerism has been followed. Myself and my principal assistant always wash our hands and arms, with the aid of a nail-brush, first in turpentine and then in 1 in 20 carbolic acid before operating. But as regards gentlemen wishing to see the operation, I have never seen the slightest reason to ask any questions as to where they had been or what patients they had seen, as I have every confidence in the protective measures adopted to avoid any obnoxious principle being transmitted by them to the patient.

After being anæsthetized, the patient is secured on the operating table by passing one sheet over the upper part of the chest and another over the thighs and tying them under the table. It is better further to fasten the hands with a strip of bandage to the legs of the table. The abdomen is now opened, the hair over the mons veneris shaved off to avoid carrying septic influences to the wound under the dressing, the abdomen sponged with 1 in 20 carbolic acid, and a waterproof sheet with an oval hole in it applied over the abdomen by means of sticking plaster, so as to leave enough room for conducting the operation and at the same time avoid mess. The operator stands on the right side of his patient, his chief assistant on the left, whilst the spray is made to play obliquely on the wound. The left shoulder of the patient needs to be specially protected against the cooling effects of the spray. Besides the chief assistant and the chloroformist, one assistant takes charge of the instruments, another of the spray, another of the sponges, and lastly, if the cautery is used, that needs to be looked after. The bladder is emptied. The incision is made in the mesial line, not going nearer the symphysis than 1 or 1½ inches for fear of injuring the bladder. It is better if one does not meet with any rectal fibres in the incision, but it is very common to do so, except the tumour is large and the abdomen widely distended, and need cause no concern or interrupt the work. The bleeding points in the incision should be tied with catgut ligature or caught individually in a Pœan's forceps, and retained in their grasp while the operation proceeds. Care is needed, as we near the peritonæum, to avoid

penetrating it and the tumour at once. It is best to raise a small portion of the peritonæum in the grasp of a dissecting forceps, and open the abdominal cavity by the stroke of a probe-pointed scissors acting on the portion pinched up, the scissors being held nearly horizontally. The opening, once made, is to be enlarged upwards and downwards with scissors, the finger of the operator acting as a director.

The abdominal incision should be at first just as much as allow the hand to pass; this will be 3½–4 inches. The hand is now passed into the abdomen and passed round the tumour to ascertain if it has adhesions. If these are not firm the pressure of the hand is sufficient to tear them asunder. Sponges are carefully arranged by the side of the tumour to prevent any of its contents entering the abdominal cavity. The trocar of the large aspirator is now plunged into the largest cyst of the tumour that can be reached, and this emptied. After this the large cysts may be emptied in succession. The tumour is kept from retracting by one or other of the special forceps for that purpose. As the tumour empties, the abdominal cavity should be filled up with carbolized sponges, and pressure should also be made on the sides of the abdomen by the chief assistant.

I ought to have mentioned that it is of the highest importance to count the sponges before and after such an operation, as serious accidents have resulted from neglect of this precaution. It is also of importance not to allow any dividing of the sponges during the operation, such as to make one large sponge into two small sponges, in case the increased number thereby arising may be forgotten at the end of the operation.

If the contents of the tumour will not run, the small cysts must be broken up and turned out, sponges being inserted round the opening to prevent the *debris* entering the abdomen. The tumour, being gradually diminished in size, is drawn through the wound. Adhesions are attended to, and either torn asunder or tied, as is deemed necessary. The moment the tumour is out, the abdominal wound is to be covered with sponges, to prevent the entrance of carbolic spray into the cavity of the peritonæum. The tumour once out, the pedicle has to be attended to. If the cautery is to be used, the pedicle is placed in the grasp of the cautery clamp, and the tumour removed. A small portion of tissue, about half an inch in thickness, is slowly cauterized—the slower the better.

Before cauterizing it is advisable to retain command of the stump by placing a Pœan's forceps below the cautery at each side of it, so that when the cautery is ultimately loosened the pedicle may not drop out of sight.

After cauterizing the stump the sponges are removed from the abdominal cavity, and if there is reason to suspect that blood or *debris* from the tumour has entered it, it is to be carefully sponged dry. There is much greater danger in leaving any smudge to be ab-

sorbed by the peritonæum than there is of peritonitis by the measures needed to cleanse the cavity. This part of the operation being completed, the clamp is carefully slackened and the surface of the stump examined for oozing or bleeding, the stump being held in position by the Pœan's forceps. As there is danger that these forceps may themselves arrest hæmorrhage, the one should be slackened after the other; and if on the most careful inspection no bleeding results, the pedicle may be dropped into the abdomen. If an artery bleeds, a silver loop is tied round it and cut short. The cautery is doubtless a most slow and troublesome method in dealing with the pedicle, and is not always certain as a hæmostatic. The great success of Dr Keith with it, and the fact that those cases I lost were ligatured cases, gave me a prejudice in favour of the cautery; but the experience of the ligature at the Samaritan Hospital certainly inclines me to look with favour on the ligature, and to believe that my fears of evil results from it are groundless. Having been compelled to use it in the last two cases, as it is so much more easily employed, I mean to recur to it. When the ligature is used the pedicle is transfixed and tied in two to four or more portions, care being taken, in passing the ligatures and securing them afterwards, that they are all linked in a chain, so that no gaping portion is found in it. The pedicle being disposed of by one or other method, two flat sponges are now placed inside the abdomen, one on each side of the wound, to absorb any blood that may flow from the stitches as they are passed, and the carbolized silk ligature is then carried through the entire thickness of the abdominal wall. It is best to have a straight needle for this purpose, one at each end of the thread, the needle being passed from the peritonæal aspect, penetrating about half an inch beyond its free border, and carried out through the skin at a point sufficient to give a good hold. From four to five of such sutures are usually enough. The sponges are taken out after the sutures are passed. Care must be taken, when tying the sutures, to include no pieces of omentum or portions of intestine, and the deep sutures should not be tied too tightly, else they are apt to irritate. Superficial sutures of catgut, of silkworm gut, or horse-hair may be used; any non-irritating substance will do.

A portion of protective is placed on the wound, and plenty of gauze laid over the abdomen, whilst finally the chief dressing is laid on and the whole secured with a broad roller of gauze. It is better to put a piece of cotton or linen over the sacrum, as in a certain number of cases the gauze is apt to induce bed-sores. The dressing is better to be secured from slipping by means of an india-rubber bandage, which should pass round the thighs so as to keep the whole in position. If the wound is carefully dressed and no pain complained of, it need not be touched till the eighth day. The deep stitches may then be removed. If catgut has been used, the superficial stitches will already have disappeared, but silkworm gut will

be perfectly fresh, and, as it is quite unirritating, may be left for other four or six days to give a little support against strain. By the twelfth to fourteenth day the antiseptic dressing may be entirely removed. It will thus appear that I have reduced the dressings latterly from four or five to twice or thrice, and with advantage. I also think a drainage-tube is, as a rule, both a danger and a nuisance. It necessitates frequent changes of dressing, and, I cannot help feeling, increases the risk of septic infection. If the operation is performed with absolute antiseptic strictness, and the abdomen well cleaned out, it will seldom be necessary to use a drainage-tube.

So soon as the operation is finished the patient is clad in flannel and put to bed with hot bottles around her. A brandy enema is administered, as usually at this time the patient is more or less in a condition of shock. The after treatment is very simple. In all my cases I have strictly followed Dr Keith's practice in that respect, and I have no reason to regret doing so. In some books on this subject all kinds of rules are given as to feeding and attention to the acting of the bowels and the administration of opiates. These I regard as unnecessary or worse. A small quantity of milk—about ℥iv.–℥vi.—the first twenty-four hours, mixed with hot water, is given from time to time in teaspoonfuls. Nothing else is allowed if all goes well. This amount is slowly increased, but only milk and water are given the first week. It is seldom that there is much pain complained of in the abdomen. A morphia suppository may be used the first night, but I have seldom done so that I did not regret it. On the second or third day wind begins to pass. This is apt to cause abdominal pain, and it is better to tell the patient so. On the eighth or ninth day the bowels frequently open of their own accord. If they do not do so, a dose of castor-oil is administered on the ninth day, after which a somewhat more generous diet, in the shape of porridge or other farinaceous food, is allowed. By the end of the fortnight ordinary diet may be given, and by the fifteenth or sixteenth day the patient may get up. You will therefore see that our after treatment is very simple.

The pulse and temperature are usually below normal after the operation. On the evenings of the second and third day the temperature touches 100°, or perhaps rises a little over it, but in the morning will be found about 99°. After the third it falls to nearly normal and remains so. The pulse follows the temperature, averaging usually from 80 to 110. High temperatures, in the ordinary run of cases, appear to me to be referable rather to carelessness in cleaning out the abdomen, and to be consequently more thoroughly avoided by preventing their cause than by the use of cold affusions or quinine.

In conclusion, I cannot omit this opportunity to express my obligations to many medical friends who have aided me in these operations, and without whose assistance it would have been difficult,

if not impossible, for me to complete them. Among these I should specially mention Dr Montgomerie Bell, Dr M'Gibbon, Dr Andrew, Dr Foulis, Dr Caird, Dr J. Playfair, Dr Jardine, Dr Chapman, and other friends who have come forward as occasion presented.

Dr Craig thought no apology was due to the Society by Dr Macdonald for his bringing such an interesting record under notice. The results were gratifying and the statistics carefully given.

IV. *The President* then read his NOTE ON THE PRESENCE OF SUGAR AND OF ALBUMEN IN THE URINE OF THE LYING-IN WOMAN, which appears at page 168.

MEETING XV.—JULY 19, 1881.

DR CHARLES BELL *in the Chair.*

I. *Dr T. R. Ronaldson* read his paper

ON TWO CASES OF LABOUR IN RICKETY PELVES.

CASE I.—Mrs W., æt. 30, was delivered of her first child at the full time, 21st November 1878. The child presented with the head first, but the cranium played above the inlet of the pelvis and would not enter. I accordingly turned, and the child was born with no great difficulty. The conjugate was ascertained to measure $3\frac{5}{8}$ inches. Not having taken accurate notes of the case, I cannot give further details of the labour. Mrs W. became pregnant a second time, and labour pains set in during the afternoon of 11th December 1880. They continued steadily and increased in frequency during the night and next day. I saw her for the first time at 9.45 P.M. next day, 12th December. On abdominal palpation the head of the child was found above the pelvic brim; the limbs were to the mother's left side, and the back to the right. The fœtal heart was heard loudest at the level of the umbilicus on the right side. On vaginal examination the os was found to be about the size of a five-shilling piece, soft and dilatable. The membranes protruded during a pain like the finger of a glove. The face presented, the fronto-mental diameter lying transversely, the chin to the right. I ruptured the membranes, and introduced my hand into the vagina and through the os in order to make out exactly the relation of parts. The head was found to lie as already indicated. It had passed through the internal os, but lay within the external os, *i.e.*, in the dilated cervix. The internal os encircled the neck of the child moderately tightly. A knuckle of cord had passed through the internal os and was felt at the side of the child's neck. I waited for

some time, and as soon as I was satisfied that the head made no progress I applied the long forceps (Professor Simpson's modification of Tarnier's axis-traction forceps). I got a good grip, and pulled with all my strength. The forceps slipped twice without in the least helping the head through the brim. I sent for Dr Hart, and he came to my assistance. He agreed with me as to the position of affairs, and recommended turning, as the forceps had failed. He accordingly gave chloroform, and I proceeded to turn. I introduced my hand into the uterus and found the head rotated through half a circle, the chin and back of the child both lying to the mother's right. The turning was readily accomplished. I had rather more than usual difficulty in getting down the arms; and when that part of the operation was accomplished we turned the woman on her back, so that while I exerted moderate traction from below, Dr Hart energetically applied supra-pubic propulsion from above. The head came through the brim with a slight jerk, and there was no further difficulty. The head and neck of the child bore ample evidence of the fact that considerable force had been used in trying to deliver it with forceps. It recovered and is now well.

Case II.—Mrs L., æt. 28, asked me to attend her during her third confinement. Her previous obstetrical history was as follows:—Her first confinement took place on 17th September 1878. Labour continued from 2 A.M. to 4.30 P.M. Her medical attendant applied instruments, but failed to deliver the child. At 12 noon further assistance was sent for. On the arrival of another medical man forceps were again applied, and finally the child was delivered, but with its head much injured—the scalp being cut open. It lived for 24 hours. Her second confinement took place on 4th January 1880. Labour lasted from 5 A.M. to 9.30 A.M. At 8.30 A.M. forceps were applied, and with the combined strength of the medical attendant and a strong neighbour the child was born dead.

I first saw Mrs L. shortly after the completion of the 8th month of utero-gestation. On hearing her previous history, the question to decide was whether to bring on premature labour or to allow her to go on to her full time, so that the mechanism of parturition in her at the full time might be noted, and a subsequent labour be managed with more accurate data to go upon.

Dr Hart kindly saw her with me, and we agreed that the conjugate at the brim measured $3\frac{3}{8}$ inches; moreover, that, considering all the circumstances of the case, it would be best to adopt the latter course. Her third labour began at 4 A.M. 27th January 1881, and lasted until 9.30 A.M. When I arrived I found the os dilated to the size of a five-shilling piece, soft and dilatable, membranes unruptured, head presenting, and lying transversely with the occiput to the left and the sagittal suture canted near to the symphysis, and both fontanelles easily felt.

Dr Hart was sent for, and agreed as to the position and the rela-

tion of parts. Chloroform having been administered by Dr Hart, I introduced my left hand into the uterus, ruptured the membranes high up, grasped both feet, and turned without difficulty. We had excessive difficulty in getting down the arms, which were jammed forwards against the symphysis. After alternate and repeated trials this was finally accomplished by Dr Hart. To get the head through the brim I pulled from below, while Dr Hart exerted supra-pubic propulsion from above, the woman lying on her back. After the use of considerable force the head came through the brim with a jerk, and the delivery was thereafter effected without any difficulty. The child was to all appearance dead, but as there was cardiac pulsation, although it was very feeble and infrequent, we introduced a catheter into the trachea, and thereby very effectively carried on artificial respiration. Backed up by warmth, it certainly saved the child's life when no other kind of artificial respiration gave any prospect of doing good. Finally brandy and sulphuric ether were injected subcutaneously and the child lived. There was a faint depression on that side of the child's head which came into relation with the sacral promontory, but it was not well marked.

Mother and child subsequently did well.

Remarks.—The two cases narrated are examples of the simple flat pelvis.

In Case I. the points to be noted are—(1) the size of the conjugate at the brim, as ascertained by actual measurement, viz., $3\frac{5}{8}$ inches; (2) the swinging of the head above the brim without engaging, in her first confinement; (3) the face presentation in her second; (4) the uselessness of the forceps to effect delivery in the latter, although employed with much force; (5) the ease with which delivery was accomplished on turning; (6) the passage of the head through the brim with a slight jerk.

In Case II. the facts to be noted are—(1) the previous obstetrical history of the patient, pointing to serious obstruction to the passage of the child, and to the fatal result, as far as the child was concerned, of the use of the forceps; (2) the size of the conjugate diameter, viz., $3\frac{3}{8}$ inches; (3) the position of the head at the brim, transversely situated, sagittal suture canted forwards, anterior fontanelle low down; (4) the much easier transit of the head through the brim on turning than on the use of the forceps; (5) the passage of the head through the brim with a jerk; (6) the mark on the head.

Dr Napier remarked on the value of noting how the child's head lay at the brim, as a means of guiding one to the right treatment. He had recently delivered a living child by turning, where previous children delivered by forceps had been still-born.

II. *Dr Charles Bell* then read his paper on

EXTRA-UTERINE CONCEPTION.

I HAVE been induced to bring the subject of extra-uterine conception under the notice of the Society, not only from its being a rare and obscure form of pregnancy, but because it is the most fatal both to the mother and child. Added to these circumstances I have an additional reason, in having a lady now under my care who is suffering from that melancholy accident, and I have the opportunity of showing you some of the bones of the fœtus which were expelled from the rectum at different times.

Extra-uterine pregnancy is an accident which is not confined in its occurrence to women, as it is occasionally met with in the lower animals, and its occurrence is equally unaccountable in all classes. It was first noticed, apparently, in the eleventh century by Albucasis, an Arabian physician, who reports a case in which an abscess formed at the umbilicus, and when it burst the bones of a fœtus were discharged. Little notice of this form of pregnancy is found after that period until the year 1531, when Polinus referred to the case of a woman, the mother of nine children, in whom an abscess formed in her left hypochondrium in her tenth pregnancy, which gave exit to a male child that lived eighteen months; but the mother died in great suffering on the third day after the expulsion of the child. In the early part of the sixteenth century Cornax dilated an ulcer near the umbilicus and removed a fœtus in a semi-putrid state, which had apparently been retained five years. Felix Platerus relates a case of a concubine of one of the sacerdotal orders, who in the third pregnancy suffered severe pain for eight days, resembling the pains of labour, which ceased without delivery. A variety of complaints came on, followed by the formation of a small swelling above the umbilicus, from which, on making an incision, an entire fœtus was removed in a semi-putrid state, and the patient made a good recovery. Cordœus, a cotemporary of Platerus, relates a case of a lady who had been married many years without having a family, when at the age of forty she had all the signs of labour without any fruitful result. The pains subsided, but they were followed by prolonged bad health, which confined her to bed for three years, when she died. On opening the abdomen a fœtus was found encased in a bony crust. It must have remained in the abdomen twenty-eight years. Primrose relates an interesting case of a woman aged thirty, who, after giving birth to seven children, conceived again in 1591, when everything seemed to go on as usual until the ninth month, when lumbar pains came on, but they terminated without any satisfactory result, and the fœtal movements ceased. The abdomen on the right side remained large. Her menses returned and continued regular for two years, when she again had signs of pregnancy, attended with fœtal movements and increased

size of the abdomen. At the eighth month the fœtal movements were most violent, and they were accompanied with pains in the lower part of the abdomen. These ceased, as on the former occasion, without delivery. After three months a tumour formed on the right side of the abdomen, quite distinct from the swelling on the left side. An abscess formed on the right side of the umbilicus, and when it burst it discharged a quantity of pus, along with fœtal bones. This led to the swelling on the left side being opened, when the bones of another fœtus were found and removed. Hildanus mentions a woman of forty-five years of age, the mother of eleven children, who again became pregnant; but the pains, resembling those of labour, terminated without delivery. She afterwards became subject to severe pains resembling labour, and gradually a large tumour formed at the umbilicus, which was opened, and the skeleton of a fœtus was removed. Cicatrization followed, and the patient was restored to health.

I have referred to these cases not only from their extreme interest, but because they seem to point out the treatment which it would be justifiable and judicious to follow in many cases.

Authors have divided extra-uterine pregnancy into three orders, designated the ovarian, the tubal, and the ventral. These may be readily distinguished after death, but it is impossible to do so during life; and even if it were possible, it would lead to no change or improvement in the treatment.

Symptoms.—The symptoms are extremely variable and uncertain, which renders a diagnosis very difficult in the early months. In some cases they differ little from natural pregnancy, and the health remains for some time unimpaired, or even to the period of ordinary pregnancy. In other cases the symptoms resemble those of some uterine or ovarian disease, and are attended with such intense suffering in the abdomen as in some cases to produce syncope. In some cases the catamenia are not suspended, in others they are irregular, in the early months, being occasionally very profuse. It is not unusual for clots like moles to be expelled from the uterus, giving the impression that abortion has taken place. The breasts enlarge, and the areola becomes dark. There is occasional sickness, and sometimes the stomach is so irritable that it rejects everything. The fœtal movements are felt, but not in the natural situation. There may be constipation, but more frequently there is diarrhœa with violent tenesmus, especially if the tumour is in the neighbourhood of the rectum; at the same time there is suppression of urine. Occasionally there is excruciating pain near the umbilicus resembling colic. Champion refers to a sense of weight and uneasiness in the pelvis, which extends in some instances up to the kidneys, as a symptom especially to be observed. On examination per vaginam the uterus is generally slightly enlarged, but not to the extent corresponding to the period of pregnancy. In some cases there is a difficulty in reaching the os uteri; in

others, in place of being raised up it is pressed down, so that it protrudes from the vulva. Astruc was of opinion that this form of pregnancy was more apt to occur in unmarried women and widows than in married women of regular habits. But it is confined to no period of life after puberty, as there are cases recorded as occurring in girls of thirteen as well as women above forty-six.

The period at which the fœtus dies is variable. In some cases it survives until the ninth month of gestation. The period at which the mother dies is equally variable. According to Dr Campbell, "in ninety-eight cases in which he could decide, or nearly so, on the stage of pregnancy, the fœtus died at the close of nine months; seven about the seventh month; one in the sixth month; two in the fifth month; two in the fourth month; and one at the end of the first month.

The accident occurred "in the first pregnancy in four cases; in the second, in eleven cases; in the third, in thirteen cases; in the fourth, in four cases; in the fifth, in four cases; in the sixth, in four cases; in the seventh, in two; in the eighth, in two; in the ninth, in one; in the tenth, in one; in the eleventh, in one; in the twelfth, in one; and in the thirteenth, in one."

This author mentions the remarkable instance of two patients who had three extra-uterine fœtuses in their abdomen at one time, and both recovered, the decomposed fœtuses having been removed through the walls of the abdomen. He also states that nine women became pregnant in the natural way while the intra-uterine fœtus was still in the abdomen, one four times, one six times, and one seven times.

The period which the fœtus may be detained in the abdomen is very variable and uncertain, depending in a great measure on the constitution of the patient; hence it varies from three months to fifty years. In twenty-six of Dr Campbell's cases the bones of the fœtus were evacuated through the rectum, and six of the mothers died. In twenty-nine cases the bones of the fœtus were evacuated through the walls of the abdomen, and three of the mothers died. In eight cases the fœtal bones were discharged from the vagina, and three of the mothers died.

Cause.—This is exceedingly obscure, and although many theories have been suggested, no satisfactory one has been arrived at. It has been supposed to be occasioned by a fright, fear, anxiety, or a fit of passion occurring during connexion; but the truth is, that we are still totally in the dark in regard to its cause, therefore no prophylactic has hitherto been suggested.

Diagnosis.—This is extremely difficult in the early months, if not impossible, but as pregnancy advances it becomes more practicable through the means of the stethoscope and the uterine sound, and by examination per vaginam and per rectum. If we find that the size of the uterus does not correspond with the period of pregnancy, our suspicions may be roused, and they may be confirmed

if the sounds of the fœtal heart are not heard in the usual place, and being at a distance from the uterus, also by the continuance of the catamenia, and by the os uteri being open; in which circumstances it will be justifiable to introduce the uterine probe, which in all probability will throw much light on the nature of the case.

Prognosis.—The prognosis of the case must always be of the most cautious kind, as much must depend on the constitution of the patient, and as inflammation may suddenly come on and prove fatal. Therefore it is impossible to give a definite or satisfactory opinion as to the likely termination.

Treatment.—This must be entirely palliative, in many cases depending on the symptoms which arise. Everything which is likely to excite the patient is to be avoided; she should therefore refrain from active exertion, and remain very much in the recumbent posture. The bowels should be regulated by mild medicines, and probably the best will be castor oil or Gregory's mixture. The pains should be moderated by the bromide of potassium, chloral, or camphor, rather than by opium, which is apt to interfere with digestion. It may be given, however, with great advantage in the form of suppository. The strength must be supported by nourishing and easily digested food. If there is irritability of the stomach it may be overcome by effervescing draughts, and the violent acidity by antacids, such as the bicarbonate of potash and bismuth. Should inflammation come on it must be subdued by antiphlogistic means, in which leeches may be included. Poultices are often very soothing, especially when an abscess is obviously forming, which is indicated by frequent rigors. The moment the abscess is matured it should be opened, as in many instances it may contain the bones of the fœtus. After the expulsion of the fœtal bones stimulants and tonics should be given.

The Cæsarean section has been suggested, and it has been practised with considerable success on the Continent. Dr Campbell[1] refers to thirty cases in which "gastrotomy," as he calls it, had been performed, and twenty-eight of them proved successful, so far as the mother was concerned. In nine cases in which the operation was performed during the life of the child or soon after its death, all the mothers died. He adds that out of fifty cases in which this operation was performed, only two of the children were saved. Therefore, so far as the children are concerned, the operation is not encouraging.

The case of the lady now under my care is one of deep interest, and I am in hopes that she may ultimately be restored to health. She is now in her thirty-seventh year, and is the mother of three children. About four years ago she became pregnant, as she thought, in the natural way, although she felt very different from

[1] *System of Midwifery*, p. 641.

what she had ever done before, and her general health became much impaired, and she had frequent sickness and vomiting. About the fourth month severe pains came on, leading her to suppose that she was going to have a miscarriage, but they subsided without that result. She became a confirmed invalid. She suffered much pain in her left groin and lumbar region. The abdomen became immensely enlarged, and her menses ceased for ten months, after which period they returned and continued regular until a few months ago, when she was seized with typhus fever, followed by rigors, frequent vomiting, diarrhœa, and dysuria. These symptoms became modified after the expulsion of some small bones, consisting of a scapula, a tibia, and a rib, etc.

She now came entirely under my care, her country medical attendant having fallen into bad health. On examination I found the abdomen much distended, which prevented any tumour being felt externally, and there was considerable tenderness on pressure on the left hypogastric region. On examination per vaginam the uterus felt slightly enlarged and retroverted, the os was sufficiently dilated to admit the point of the finger, but no tumour could be felt in the vagina; on examination per rectum, however, a tumour about the size of a fœtal head could be felt high up on the left side of the spine, and was exceedingly tender to the touch. I therefore concluded that a large portion of the fœtus still remained.

On this occasion she mentioned that she had had repeated blisters applied to the abdomen without any benefit. She therefore had spongiopiline sprinkled with spirit of camphor applied in place of the blisters and large poultices she had been using; and for the irritability of stomach, she had the liq. bismuthi in the form of effervescence, along with the bicarbonate of potash and citric acid. After the sickness was allayed she was ordered to take a dose of castor oil; when it acted it brought away a quantity of bones, among which there was a large portion of the scalp, along with a quantity of white fluid, which proved to be principally composed of pus.

As she still suffered pain she was ordered to use morphia suppositories, which gave her great relief and comfort. After the introduction of the first she slept nine hours. Pus still came away from the rectum, accompanied with tenesmus, and occasionally some small bones were expelled. She was ordered to have nourishing diet and port wine, and, when the irritability of the stomach came on, to take the effervescing draughts and ice.

She now came to Portobello, for the benefit of change of air. The abdomen was now much diminished in size, and on examination per vaginam the parts were natural, but the rectum was found loaded. She was therefore ordered to have castor oil, which brought away a large quantity of scybalous matter, which nearly filled a large *pot-de-chambre*, but there was no pus or bones.

On examining the rectum it felt much relaxed, but there was no tumour. I therefore concluded that many bones must have come away without being observed; but four days after this examination she had a return of pain and puffiness of the abdomen, accompanied with irritability of stomach, and rigors, followed by a profuse discharge of pus from the rectum, with several fœtal bones, among which were the other scapula and the other tibia. She felt considerably exhausted after this, but in a few days she was able to go and sit for an hour and a half on the sea-beach, and three days after that she returned home, a distance of upwards of thirty miles, and suffered comparatively little fatigue.

She is now getting nourishing diet with port wine, and occasionally a little brandy, along with Easton's tonic syrup.

A month after the above report she had a return of sickness and violent pain in the rectum, and when the bowels were moved the other half of the scalp was expelled. But pain in the rectum still continued, and the bowel was so much relaxed that the suppositories which had given so much relief could not be retained. An injection of alum and opium was therefore recommended.

Dr Battey of Rome, Georgia, U.S.A., had seen four cases of extra-uterine fœtation. In three, no operation could be performed, and in one he had operated as he would afterwards detail. In cases where the fœtus had died, their duty was to wait and let nature as it were lead on, aiding her when necessary. When the fœtus was living, a very grave question arose, throwing very great responsibility on the medical man in charge. There was really no fixed rule. Cases of operation there were in fair amount and with moderate success. In his own case the patient was in the sixth month of gestation. The diagnosis was very difficult; and doubt and scepticism were expressed by other medical men as to the opinion he had given on the case. The os uteri was inaccessible, the uterus high up and to the left, and the true pelvis filled with a sac. Ballottement was obscure at first, but more distinct afterwards. Fœtal movements were obscurely felt. The distress and pain felt by the patient were unusual, and latterly the obstruction to the bowels very serious. There was also difficulty in emptying the bladder, so that the catheter had to be employed. The bowel, indeed, was so loaded, that after operation a large amount of fæcal matter issued simply from the distention. The case was such as forced him to operate. In making the vaginal incision, he used Chassaignac's ecraseur, first passing the curved trocar with reversible blade. He punctured the sac in front of the rectum, and shoved the canula towards the neck of the uterus as high as he could. He next brought out the trocar in front of the uterus, caused the chain to follow, and cut through the tissues without hæmorrhage. In seizing the fœtus the opening proved too small. This displaced

the placenta, and a fearful gush of blood occurred. He tamponned both sac and vagina, but the patient became pulseless. Under frequent hypodermics of whisky (140-150) she rallied, however, but died ultimately from septicæmia on the 6th or 7th day. The child survived 1½ hours. Dr T. G. Thomas had operated with good success in four cases. It was evident that every case had to be treated on its own merits.

On the motion of Dr Napier of Dunbar, seconded by Dr Chas. Bell, a vote of thanks was unanimously accorded to Dr Battey.

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